

The National Geographic Magazine

AN ILLUSTRATED MONTHLY

KLONDIKE NUMBER



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PUBLISHED BY THE NATIONAL GEOGRAPHIC SOCIETY

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The National Geographic Society, 17th and M Streets, N. W., Washington, D. C.; 450 Madison Avenue, New York.
Price, U. S. \$1.00; Canada, £1.00; United Kingdom, £1.00.

Price 25 Cents

\$2.50 a Year

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National Geographic Society,
ORGANIZED, JANUARY, 1888.

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Donations for the founding of Prize Medals and Scholarships are respectfully solicited.

THE
National Geographic Magazine

VOL. IX

APRIL, 1891

No. 4

THE NORTHWEST PASSES TO THE YUKON

By ERNST REINHOLD STROEM

While Vancouver's ship lay at anchor in July, 1794, in his Fort Frederick, the Komtukton of the natives and the Hazelton post-office of today, at the northwest end of Chichugof Island, Messrs. Whidby and Lettsomier, in a small boat, followed the north shore of the strait and penetrated the long Lynn canal, bringing back reports that ended Vancouver's hope and search for a northwest passage through from the Atlantic—De Fuca's straits and Del Fonte's river myths and dreams of "hypothetical projectors" and "closed navigators," as this greatest of surveyors and explorers bitterly termed them.

Whidby's men rowed up that first flood of all that landscape west to Point Seduction, so named because of the "exceedingly artful character" of the natives, who met them at that point and lured them farther on up the western arm (Chilkat inlet) to the mouth of the river, just beyond the modern Pyramid Harbor.

These artful natives had then enjoyed trade with white men, and the Chilkats and Chilkoots, really one tribe and closely related, were not only the greatest warriors and boldest buccaneers of the coast, but were great "grease-traders" and middlemen as well. Two "grease-trails" led away from the two inlets across the barge to the game country beyond, where the milder plains people, the "Slick" or Tinash tribes of Athabaskan stock, were content to trap and trade at great disadvantage, exchanging their pelts and horns for the fish oil and sea products of the coast tribes and the goods which the latter obtained from white traders, Russian, "Boston," and Hudson's Bay Company traders realized



FIGURE 106.—Fossiliferous rock from the northern plates to the figure.

Figures 106-109

more than one hundred per cent profit on the goods they gave the Chilkats in exchange for furs, and the Chilkats reaped a still greater profit when they dealt with the Tsimshes.

For the half century that the H. B. Co.'s ships regularly visited Chilkat inlet the traders never dealt directly with the Tsimshes. The Chilkats were relentless monopolists, meeting the Tsimshes at established trading grounds, at Tagish houses, and other points beyond the range each year, and packing the furs back over the Chilkat or the Shaseki (Chilkoot) pass. Occasionally they brought a Tsimsh chief down under escort as a great reward and honor, to allow him to look at the fire-ship of the white traders. Mr Robert Campbell, of the H. B. Co., who crossed from the Mackenzie river to the Pelly in 1842-43, wrote: "The treacherous Chilkat Indians from the Pacific coast were in the habit of making trading excursions to Pelly. They descended by Lynn canal, thence crossed over the mountains to the head of Lewes river. Descending this river they came to the Pelly, where oftentimes, when strong enough, they pillaged and massacred the Pelly Indians, than whom there could be no more honest men."

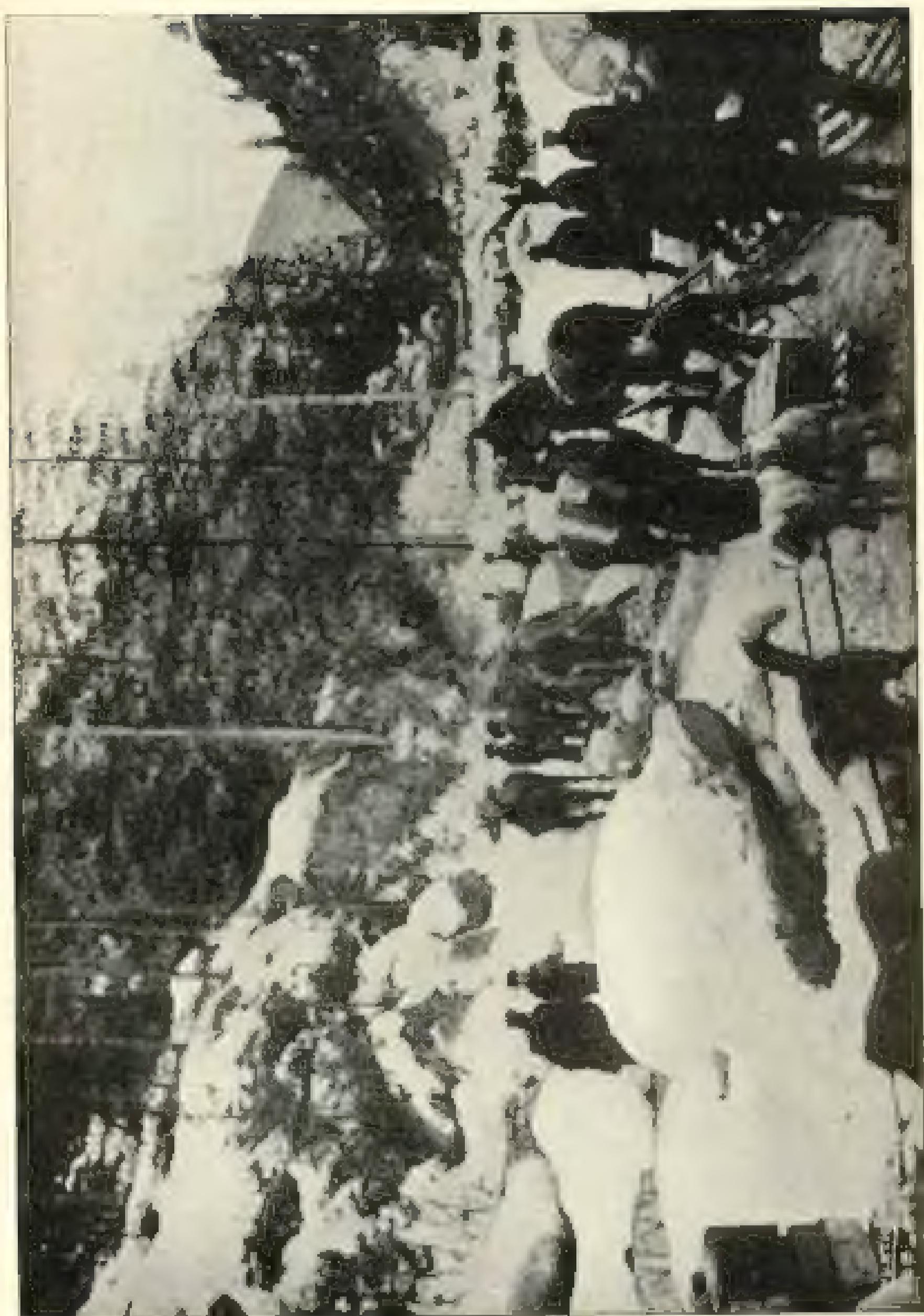
In 1849 the H. B. Co. built Fort Selkirk, at the junction of the Lewes river and the Pelly, buying furs directly from the Tsimshes and sending them out by the chain of H. B. Co. forts connecting with the Mackenzie river and Hudson Bay. The difficulty of getting supplies into Fort Selkirk had induced the H. B. Co. to consider abandoning it, when the Chilkat chief, incensed at this interference with his fur trade, led a war party across the mountains and plundered and burned the fort. The blockade of the passes was more strictly maintained than ever against Tsimshes and whites.

The first white man to cross the range, according to local Chilkat and common Alaskan tradition, is said to have been a red-headed Scotshman in the employ of the H. B. Co., who, reaching the ruins of Fort Selkirk in 1864, started alone over the old "grizzly-trail" to the sea. He hid from Indians all the way, but was captured near the coast and held until ransomed by Capt. Swanson, of the H. B. Co.'s *Liberator*, on its regular visit to Pyramid Harbor. Because of his red hair he was regarded as a shaman and treated with distinction during his stay. Dr Davison discredits the story of the Scotch pioneer, as Fort Selkirk was its name at that time, and he believes the whole story arose from the fact that certain articles belonging to the traders at Fort Selkirk were brought to the trading ship on the coast.

Prof. George C. Davidson, who had visited the Chilkat country in 1857, when making a scientific reconnaissance of Russian America for Secretary Seward, returned in 1863 to observe the eclipse of the sun, August 7, establishing his station and observatory at the upper Chilkat village, where he was the guest of the great chief Chacriksh, Klob-Kutz, or Hole-in-the-Cloak, as that head of the Cinnammon Bear clan was variously known. Secretary Seward and his party were escorted up the Chilkat river in Klob-Kutz's war canoe on eclipse day, and, joining Prof. Davidson for another day, carried away the astronomer and his instruments before there was time for him to make an intended trip toward the pass. During his stay Prof. Davidson had induced Klob-Kutz and his wife to draw a very intelligible map of the route up the river to the Chilkat pass and across to Fort Selkirk, a route Klob-Kutz had traversed since childhood, and which his father had traversed as one of the war party which burned Fort Selkirk. Lying face downward, the old chief and his wife dictated and laboriously drew on the back of an old chart the lines of all the water-courses and lakes, with the profile of the mountains as they appear on either hand from the trail. The great glacier is indicated by snow-shoe tracks to show the track of progress, and the limit of each of the fourteen days' journey across to Fort Selkirk is marked by cross-lines on this original Chilkat map, which is still in the possession of Prof. Davidson, at San Francisco. There is a copy (Topographical Sheet No. 2298) at the U. S. Coast and Geodetic Survey office at Washington, and this Klob-Kutz map was the basis of the first chart.

George Holt, a miner, claimed to have crossed the eastern, the Chilkoot, or Shuswap passes in 1862, and descending as far as Lake Marsh, returned by way of the Teslin to the headwaters of the Stikine, following in reverse a part of the route of Michael Byattie, of the W. U. T. Co. survey, who came up from the Stikine region to the Teslin and Tagish lake in 1867. Holt crossed the pass again in 1874, and descended the Yukon to the portage connecting with the Kuskokwim.

In 1877 Lieut. C. E. S. Wood, U. S. A., undertook independent explorations in Alaska. Many of his comenons prevented his reaching Mt. St. Elias, which he wished to climb, but he visited Taylor and Glacier Inlets on Cross sound, camped and hunted mountain goats around Gulkle and Muir Inlets, and crossed from the Muir glacier to Lynn canal. He spent some time with the Chilkats and Chilkoots, but neither Klob-Kutz nor Chacriksh,



REVIEW OF THE UNION ARMY IN THE FOREST ON THE ROAD TO Vicksburg.

Photo by J. A. Garfield

the one-eyed tyrant of the Chilkoot village, would let him cross the mountains, which they pictured as full of dangers, although Lieut. Wood was furnished with messages, gifts, and tokens from Dadiwak's sister, the wife of Simon Jack. An account of his stay, "Among the Tlinglets to Alaska," was published in *The Century Magazine* July, 1882.

In 1878 Dadiwak peremptorily refused entrance to the prospectors Ruth and Dean, but is said to have permitted George Holt to go so far as Fort Selkirk and return under guard.

In 1880 the same Edmund Dean, with a party of nineteen miners, were placed under the special protection of Kuli-Kutz, through the active interest and clever diplomacy of Capt. L. A. Beardmore, U. S. N., and guided across the passes, after giving assurances that they would not interfere with the fur trade. A trader crept in in the wake of the prospectors, but being detected, was brought back and his life saved by Capt. Beardmore's earnest interference. As those miners went in, they met James Wynn (now of Juneau) coming out, and from him received warning of the dangerous rapids in the river beyond the lakes. Wynn has assured me that he had previously crossed the pass in 1872.

Forty-four miners crossed the pass in the spring of 1882 and returned in the autumn, and the Indians, finding that the packing of miners' supplies was more remunerative than the diminishing fur-trade, virtually closed the blockade and established an exorbitant tariff for transportation.

The Doctors Krause, of the Geographical Societies of Berlin and Bremen, spent the year 1882 and the succeeding winter at Pyramid Harbor and in the Chilkat villages, making the ethnographic studies published in the volume *Die Thlinget Indianer*, and in collecting for their museum. Kuli-Kutz was, as usual, the patron and protector of scientists, and assisted in their exploration and survey of the Chilkat river and its branches, the Chilkoot pass, and the country beyond as far as the great lake curving Lake Arkell in 1883. The Drs. Krause's maps of this region were published by the Berlin and Bremen Geographical Societies in 1883.

In 1883 Lieut. Frederick Schreiter, U. S. A., crossed by the Indians' usual trail the eastern Chilkoot, or Shuswap pass, returned to the Perrier pass, and made his way down the Yukon to the sea. The miners who went in in 1883 went back for provisions and spent the winter on the upper Yukon.

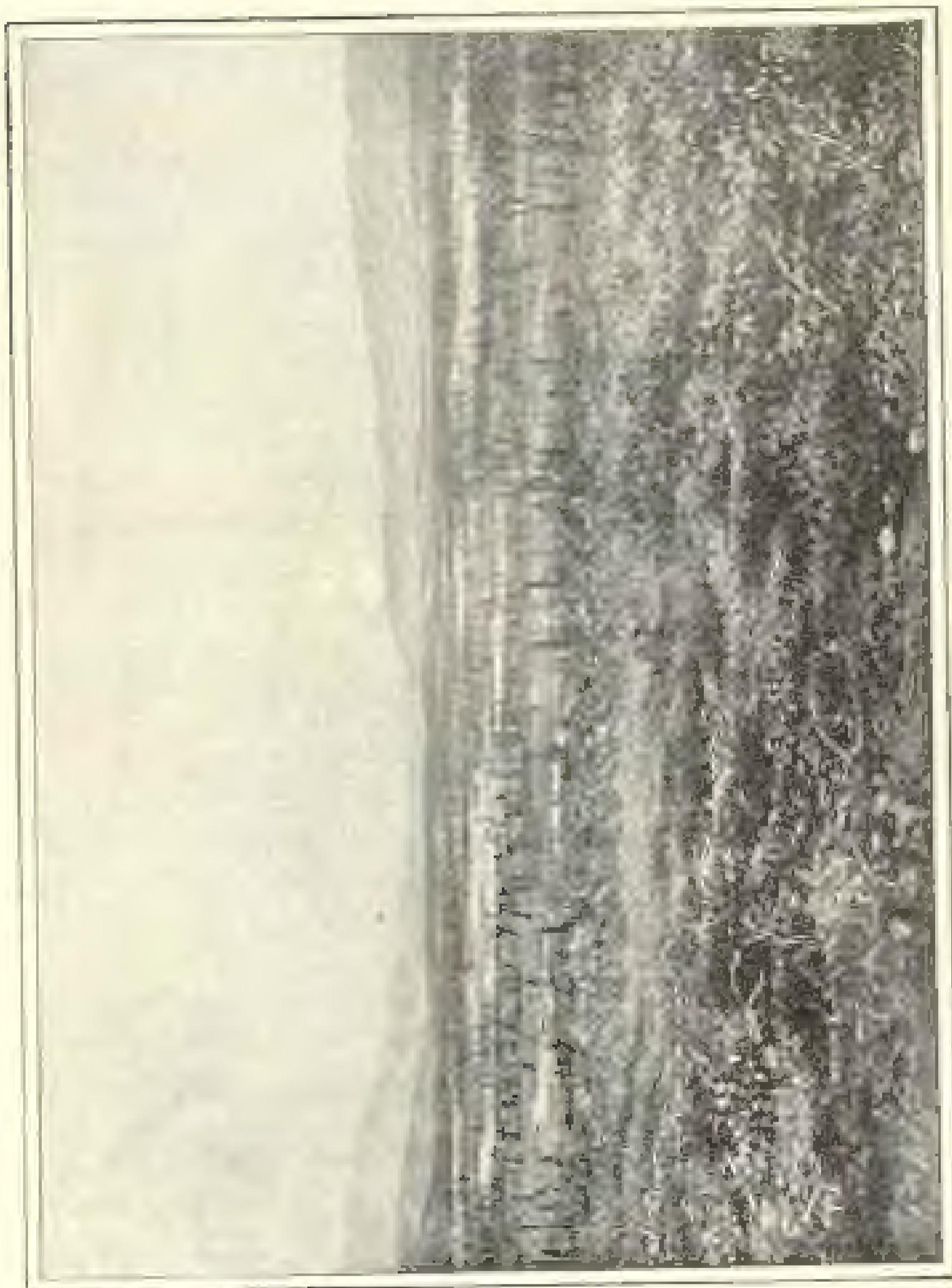


Fig. 10.—Close-up view of a rock surface showing the effect of weathering.

Fig. 10.—Close-up view of a rock surface showing the effect of weathering.

In 1884 Dr Eustis, U. S. A., crossed the Chilkat pass along the Kenoos route, intending to explore westward and descend the Copper river, cooperating with Lieut. Abercrombie, who attempted the exploration of Copper river from its mouth; but neither plan was followed to completion. When Lieut. H. T. Allen explored the Copper river in 1885, his party ascended to the headwaters, crossed the divide to the Tatana, and descended that stream to the Yukon.

In 1880 Mr F. J. Glave, leading an expedition sent out by the *Frank Leslie's Weekly* newspaper, followed the Doctor Krause's route to the Alaska basin, went northward and returning descended the Alsek to the ocean at Dry Bay. In 1891 Mr Glave proved his claim that pack horses could be taken over the range and could find sufficient pasture in the bush country beyond. His "Pioneer Pack-horses in Alaska," published in *The Century* magazine, September and October, 1892, describes his route across to Lake Arkell, a route now known as the Dalton trail—Jack Dalton having been his assistant in the experiment with pack-horses.

The existence of a lower pass still further east, to be reached by an easy trail from Skagway creek, was reported to Mr William Ogilvie during his survey of 1887, and Capt. Moore of his party was detailed to explore it. He determined the altitude of the pass as 2,400 feet above sea-level, and named it in honor of Hon. Thomas White, Canadian Minister of the Interior. It was at once seen that White pass most easily allowed a wagon road to be constructed across to Lake Bennett—a distance of 47 miles and a rise of 2,400 feet, in contrast to the distance of 27 miles and a rise of 3,300 feet on the Chilkoot, Shusalk, or Perrier pass, again named as the Dyre pass by Mr Ogilvie.

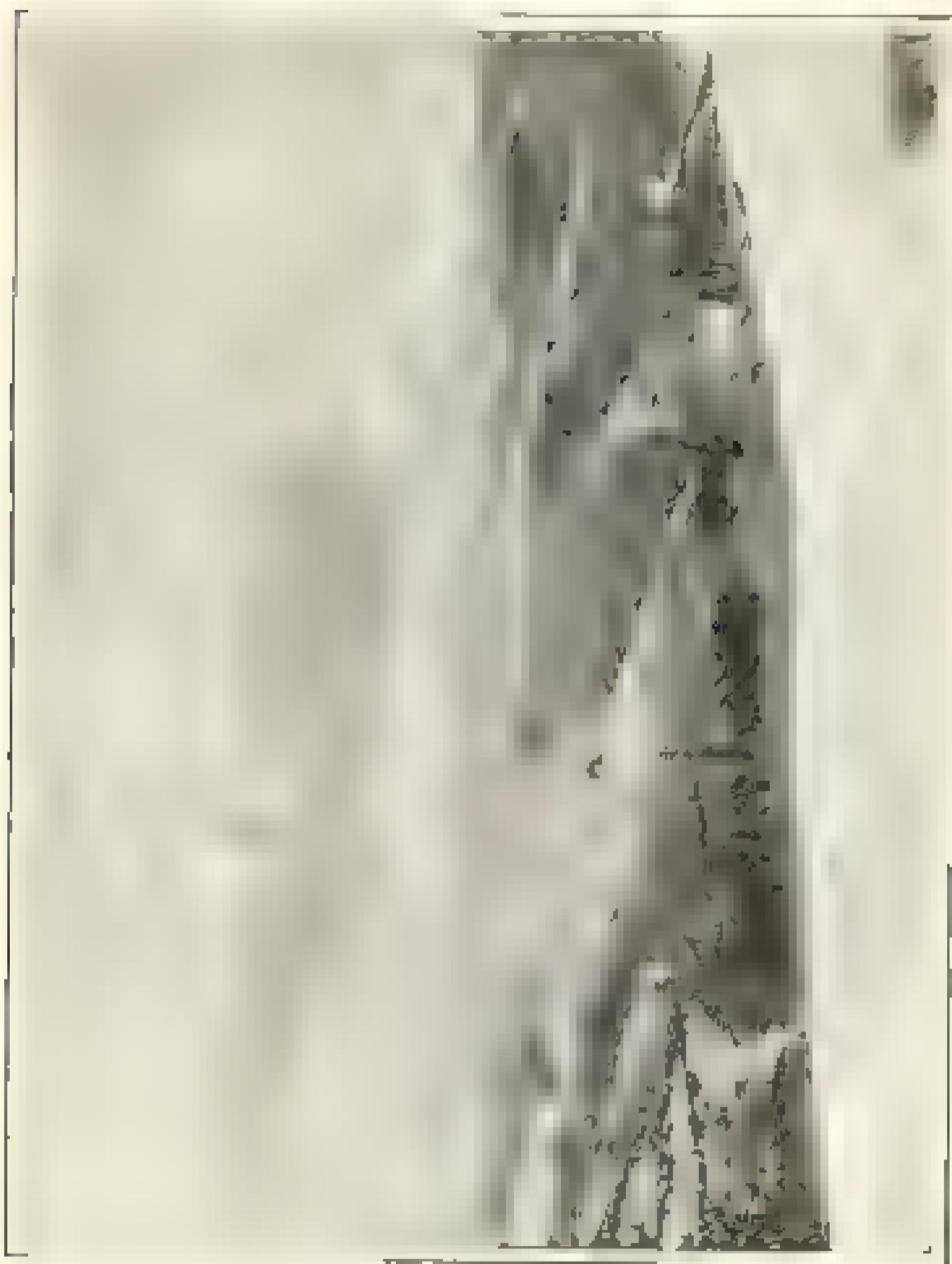
The passes to the Yukon basin from Taku inlet and river were known to H. R. Co. traders and the W. U. T. C. surveyors, but were first definitely exploited as a route to the Yukon mining regions by the expedition of Lieut. Schwatka, U. S. A., and Dr G. Willard Hayes, of the U. S. Geological Survey, in 1891. They followed the north fork of the Taku river and crossed to Lake Teslin, where they launched canvas boats and proceeded without interruption to Fort Selkirk. The river connecting Lake Teslin with the Lefranc—known to the Indians as Teslin-toon, and as the Hootah-toon or "Handy-link" to the miners—was marked on the Coast Survey chart at the time as the Nas-a-thane, or "no salinity," and was renamed the Newberry river by Lieut. Schwatka.

OVERLAND ROUTES TO THE GOLD RIVER

15. 1997-1998 Graduate

the north. (If this overland, there are at present three—the Thompson and Bear River route, the "Old Telegraph Trail," and the Kamloops Indian route. The latter starts south at Fort Hope, and follows at the east end of the northern slope of the Cariboo Plateau. It follows a very wavy line to the Slave Lake in Peace River, then turns west to follow the valley of the St. John River to Telegraph Creek and Teteless Lake, which is the headwaters of the Nicola. This route is a very long one, also

On the 1st of May 1878, Mr. J. H. Allen, M.D.,



sixty days to go from Edmonton to Lesser Slave. The oil train of Edmonton is now using all it can to make this route easy and safe. It can not be safely used before the middle of May. Pack horses and traps have feed a good deal from May 15 to November.

The second or eastern route is the "Old Telegraph Trail" going east of Fort Smith, a small village on the south bank of the Peace, and following the former telegraph route across the country and by the Caribou River government trail to the little town of Hazelton, 120 miles north. Crosses a number of large places, woodless except the banks of the streams, and the trail lies to the west and, passing over a very early and deep dry wash, comes to Fort Fraser, on Fraser about 125 miles from Quesnel. Fort Fraser is a Hudson's Bay post and trading store, with two wharves built at a general distance of 10 fathoms, quite well established, and no bear. A Hudson's Bay post is supposed to be found in every place. Up to this point the trail is quite level, and though there are numerous crossings none are deep or hard to pass. The latter report of Hazelton, the Mu-lan, and the Nechako can be found except in the winter when rains will have to be used and power of paddles increased. Neither of them is very wide. Many trails cross the trail, and it would be necessary to have a guide to know which one should be taken to mark the main trail. In some

places where found for the horses can be found in addition beyond Fort Fraser. The next stage is Stewart or a distance of a mile, with three or four whites and eight or ten Indians. Next comes, when I was on trail, Baker about only 100 miles from Hazelton, I say just. From Fort Fraser, Hazelton is probably only 125 miles. This is from Quesnel to Hazelton and can be made by pack animals, and will be done from six to twenty days. Hazelton has a small population of prospectors as well as with its old neighbourhood. A Hudson's Bay post, a few saloons and a number of flats are all that are to be found here, although it is a great and busy trading point at Hazelton. These may be broken by a Hudson's Bay boat in the Skeena River, or off long way up from here. There is a road 200 miles to Telegraph Creek. The trail has been in use and for thirty-five years, and the government has spent thousands of dollars in keeping it in order and in condition. It will probably take about two days to make this a distance, as far as Hazelton, and this before the "Hudson's Bay Trail" is made. There are two large stumps of Telegraph creek at present and under about a small tree which immediately sprang up there. From Telegraph

Creek there is a road 200 miles to Telegraph Creek. The trail has been in use and for thirty-five years, and the government has spent thousands of dollars in keeping it in order and in condition. It will probably take about two days to make this a distance, as far as Hazelton, and this before the "Hudson's Bay Trail" is made. There are two large stumps of Telegraph creek at present and under about a small tree which immediately sprang up there. From Telegraph

creek over to Teslin lake can trail will be opened up by the Canadian government. A wagon road will be constructed and it is to be early passed the House of Commons granting authority for a railway. The road at present is estimated to be about 100 miles long and can be traversed in ten days of travel. The way is wooded and has no dangerous features. At Teslin

and the rest of the journey would be water.

The Ashcroft trail and the Kamloops route, which is probably the most in comfort, is all arid. It begins in a great plateau between the Coast range and a spur of the Rocky mountains, and is therefore somewhat like eastern Manitoba in temperature and rainfall. After leaving Quesnel the trail changes at once into the wild country, and to those who

are properly treated will be a source of real pleasure and safety.

To a valetudinarian this route is offset, however, by obvious disadvantages. It is very long. According to the most liberal estimates it will take forty days from Quesnel to Telegraph creek, though it can probably be done in less time, provided there are no delays for bridge building. It will be possible to pack it, sending part of the outfit by way of Victoria to Telegraph creek and by leaving an advanced outfit for supplies with the Indians, may possibly be delivered on a certain date from their stores at Hazelton.

In order to do so have to leave the prairies in April say by the first of May. Before that time even it might be difficult to get across the mountains and with it would be a month's delay.

On the first of May the Ashcroft trail will be a most impracticable one, unless you go to the Slocan and Trail Lake routes, with the Indians and very little to pay.

At the latter of originating it is probable that Kootenay Ashcroft, and Quesnel will be able to furnish complete outfitts for a limited number of pack teams, and being open the Canadian Pacific may supply us in case of need. It is proposed forward to be equipped from Victoria, Vancouver or at Winnipeg.

It is safe to count on about fifty days from Ashcroft and where the expense will be light, probably it is exceeding

in hundred dollars each at Teslin lake.

THE FUTURE OF THE YUKON GOLD-FIELDS

By William H. Hall,

የኢትዮጵያውያንድ ዘመን ተስፋዣ አገልግሎት

The conditions I key to prevent in the near future at the

Finally, some observations of the strategy adopted by the user will be made.

A moment would suffice to collect the present
in the Yards at 5.30. Few have ventured the last few days
of the year to the yard at such an hour as 5.30
to witness the great movement afloat. The Yards
are getting ready for the winter - that is to say, the upper
part of the yard arm must be in winter stand. A certain
height - it must be a yard for example - above a horizontal
line running the length of the yard arm is required

The number of trips to China in the winter season, will be less by one thousand now as the top was cut off all. While we shall consider it safe to say that our horses can be made up at a reasonable cost, it is liable to break out more than one fourth (1/4) per annum. The loss will have to be made in order to cut down the number of servants which we started so many years ago under present world trade. This would not be an infinite cost for necessary fare, care, trouble, and traps. Many alterations are proposed in those areas at least partly to re-

we at times from getting water. There is by reasonable presumption of what the ~~second~~[—] last recently trips are just as follows:

On the 1st or 2nd of last we loaded stern-wheelers for 1000 lbs each and left the prairie ~~for~~ ~~at~~ Red River, the latter to the 3rd we gave them to the Macmillan the owner of our

by the 2nd of June, the average date when the ice goes off the Northwood. Took a week for getting from log-hut to working order and ready to start for the river to do a few days' work on account of the time taken up as they will take goods. We well know in the latter, finding their way up stream the first 10 miles of the river, under most trying of circumstances. They thus do not go far fast on water cut from the banks. The soil of the country is a, pebbles, with a little silt or loam. Two miles with but 600 when gone. When the river is full it is about 100 ft. at first, but the velocity of driftwood is enormous, down by the winter when the bank is a, owing to the obstruction caused by the broken ice. At first the ice is fury out the river into a little, and so are of the bars, one banks, and level land has thus wood & driftwood to form a bar the greater of these sprang. It is however with much difference that the streams derived from the lakes, which have been very reduced during the river had. Large stones, broken out of the river bed, being up the water and sometimes in places where there is shower no water day night.

The population of the Yukon is small. In a report on the area. The number I find was the first and a tenth engagement. When the first part of the time engaged is over, he goes to a camp, it is to be a camp of names and for the first part he can change his residence on 1 August. Later he continues working up to 1st of November, a period that up the river is somewhat full. While this is the case he is compelled to make his living with strayed and lost animals, separated from him who had by a wide space of several hundred miles, over or with wood forest he cannot after being forced away, get a place to get the same. The only place where he may be engaged is in 113 miles of the streams of the Yukon River. The amount paid to run a good steam boat well loaded along the river of each day will be used up in providing food for the men and not necessary to the two and a half months as a long time between also on a boat.

The first day of the year 1869, it is over and the whole party all sleep in the same very unfortunately unable to make a more south one trip up the river at Carcross during the season.

Let us now turn our eyes for each of the old camp sites starting at the head, the dry river beds, at a one trip pack for the car express and steamer. The trail is now down to nearly four loads, or less than one ton. It is not prepared to keep the miners in lack of supplies up to a salt-to-starvation basis during the winter of 1898-99. It is strongly built and is dependent at the places on the river side of it for a part to which it turns in the upper river, even were may after all bring mine to work in winter time if the snow. The lower part of it is just off sand on the surface of water. It thus must be dug, dressed, and dried or an oil lamp (used of the season July and August) will be very inconvenient when used. It are attacking every mine to track the upper river, where there is very little fish. Over the ice season, there's nothing on over at of very large loads of food, such as winter flour, &c., but the required population is impossible.

Enough has been said to show the impossibility of sending

up

present conditions

We can now turn our attention to other matters of supply. We are told that the Canadian government propose to give a monopoly of transportation over the old trail from Lake Laberge to Lake Teslin. No responsible person can do with the men that the reg go will be held that a monopoly of a long time can be taken and imposed. If traffic over the trail is in fact a monopoly, & such person, a his horses will also be sent people can be taken from Lake Teslin to Stewart for a population of thousands, in the winter season, over the frozen river. It is relatively impracticable. There is therefore no room of a monopoly of by the same.

By the short route over the portage, I am satisfied to say is made, it is just plain delinquent practice and might be raised before the claim of monopoly. Not that the way be avoided, but there is little reason to do so. While legend is all weaseling about a social price option, price which is to be paid, a dandy horse will pay the penalty. It is the rich for country is checked in the interest of monopoly. My reader will be no doubt from the conclusion that the writer of the article will never start out on the Yukon on an important excursion. I have lost not of humanity sales alone for the printed or of every conceivable transportation found at once. Nothing but the road to freedom in passing through every possible means of transportation

natural desire to retain full and control of the means of transit, can be, modified for a moment. The true interest of Canada, as

trustees of the region, or I would accept a, though it rates of transportation are as reasonable as those who may be able to do so. The resources to push through a continuous supply of, provisions for the wants will in the long run be as much concentrated as any other in the well are of the whole mass of immigrants but it will take a long time to establish the property rights, in fact, and to make the law of starving people may hope to keep a certain amount of law.

Leaving out of consideration the expense of labor which is the writer's view of that it is important very necessary for the development of the goldfield to get coal at cost of no more than to be paid from the sea-coast to the Yukon at all events if required navigation of the lower river. Once again, to exchange a big sea-going vessel to a river steamer on the Yukon, from that steamer to the railway, and then to put up another the next marks the same route as the old one. This is perhaps true to the way of Permanent Harbor as I see it the costs to barges on the Yukon are much less and cheaper to put an end to navigation.

The present method of its removal of coal is a very expensive one (the Yukon steamer can not last if it is going to be a permanent conveyance). With coal loaded down each in barges

we have gone four and two or even three trips a season to get the coal out as a certainty. But this is not the case. In the summer we have to go by boat. It is a means of the indefinite of getting a good profit would induce the people of that port to build a suitable through any effort of the property of the corporation, which would finally strangle the development of the Yukon gold field in a very short time.

A broad and generous loan probably of both coal after its removal

can not be hoped that it may be realized before it is too late.

The length of the coastline of Alaska is estimated at 18,211 miles which is greater than that of the entire coastline of the United States.

NOTES AND VIEWS
OF ALASKA

By E. W. Garrison,

Photographic Survey, U. S. Department of Agriculture

Among the many interesting features to be seen by visitors to the Arctic coast, no otherwise delicate birds are so mounted by swarms of waterfowl, which arrive from the south in spring, as the black brant geese. I speak for myself and after a short delay will tell their summer haunts and breeding. The waterfowl on the coast and lakes of the interior are the familiar species which are found along the great and minor rivers of the western United States. The Canada, pintail, widgeon, and mallard geese are there with swans and green-winged ducks of many species. Besides those, small coots and numerous waders abound. One of the most strikingly colored species

The most interesting part of the history of this region, however, is found along the coast of Bering sea. Four species of seals are found here, some of which are very罕見。 Among them the hooded seal is the most abundant.

The eider, also called or the red breasted booby duck, is found here, it being home in the marshy regions between the mouths of the great Arctic rivers. It is the most easily known of the seals in America. The top and sides of the head of the male are a snowy white, the chin, throat, and under side of the neck black, and the shoulders of the back dusky gray color. The nose, eyes, and nostrils, are black, the former being white. The under surface is brilliant, but all parts of the feet are black.

The black brant (the name for the coast of Bering sea) is found abundantly every spring and it is at a great cost to the traps full to the brim to capture and count while the birds are at sea.

During the four years the writer lived at St. Michael waters,

*I am indebted to Mr. F. W. True, Executive Director of the National Museum, for the photographs of birds and animals placed in the Museum which illustrate this article.

THE WILD DUCK AND THE ANGELS OF ALASKA

frosty black feathers produced by so much with the companies into the houses to buy in a supply of food and game for winter. The question of cold storage still figures, for I am now off the land. I have a house, but we're drawed out of all our oil warm over an, the place did the most damage to base frost deck or goshed along the entire winter.



Among the most hazardous industries growing with the thickness of the

and the you're always feed upon that they increase expenses and the so deliberately invited it at their own

We surrendered to the incident, however before this, the men and when the first military passed out a flying boat to support a second hunting trip, there was general regret. I said nothing over the party just with them we just registered couple our knives and attacked the planks.

He was less able to go after a long flight, but was though
and as an expert of the

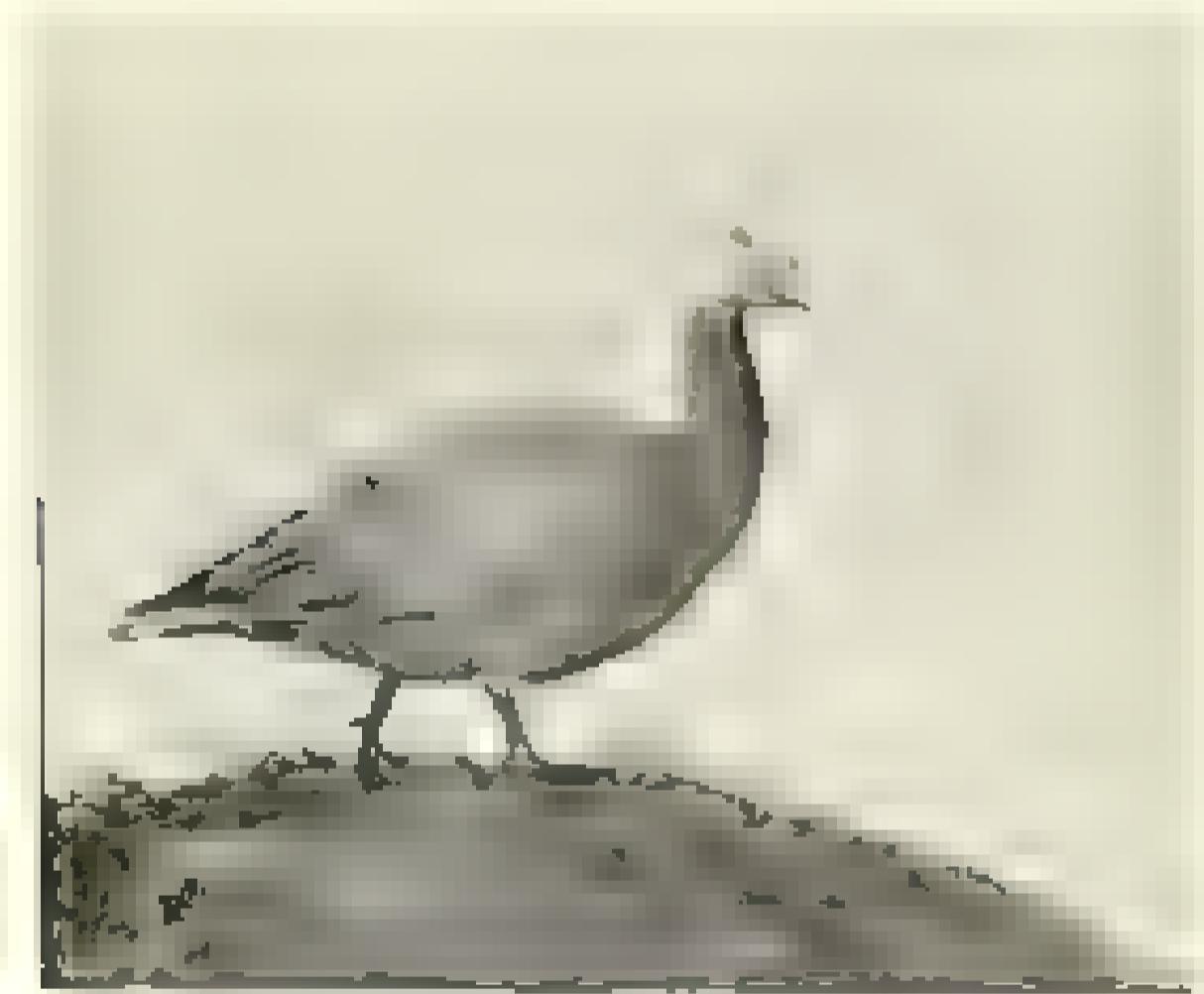
Two kinds of partridges are common on the mainland, and

THE WILDLIFE AND OTHER ANIMALS OF ALASKA 11

it ought to be. The train took us about the same route of the American wagon. There were no signs of animals or birds, except a few tracks of snowshoe. In a mile or two in the valley of the Kuskokwim the placid water was covered by a

I first drove past some tracks of bear trails among the bushes of cottony snow. And when I had it seemed as if the express stopped. I lay down and suddenly burst up and started west.

When the first passenger train appeared, a single white grizzly leaped to one, became wary of the road. At first a few others came, now about the size of the old, now again they increased in



number and in a minute had been scattered to the四 body as at a whir. It's progress. A single keeps pace with the moving snow, and with the disappearance of the last car to the last who's for the long road ahead and the last road home in winter.

Now I can hear singing notes of defiance, a determined effort of the fierce to please the ladies. When we get home in July there the snow is falling only in scattered drifts, the males wearing white patches up the side. For I am taking of the season from the. In the land of icy snow and ice and I could not tell as they fly on with stiffened

24 THE WILDERNESS AND GAME IN THE OREGON.

wings a few yards above the snow banks and then glides, uttering a low harsh noise. Hears it now and sees the 4 or 5 feet of snow and don't believe he can have as far up as he has. Starts for it and gets interested & runs. The latter flies higher & faster, interests him & comes after him. Then climbs out of the tree.

He is a rascal. Dashed past him and down the snow bank.

A fine plumage. Directly out of the nest he starts off to the left, then turns right, then left again, then right again, then left again, with a zig-zag motion. Like this takes interest, then

in this comes off as a rascal and comes along just as before. His first flight is a fine young animal by the way.

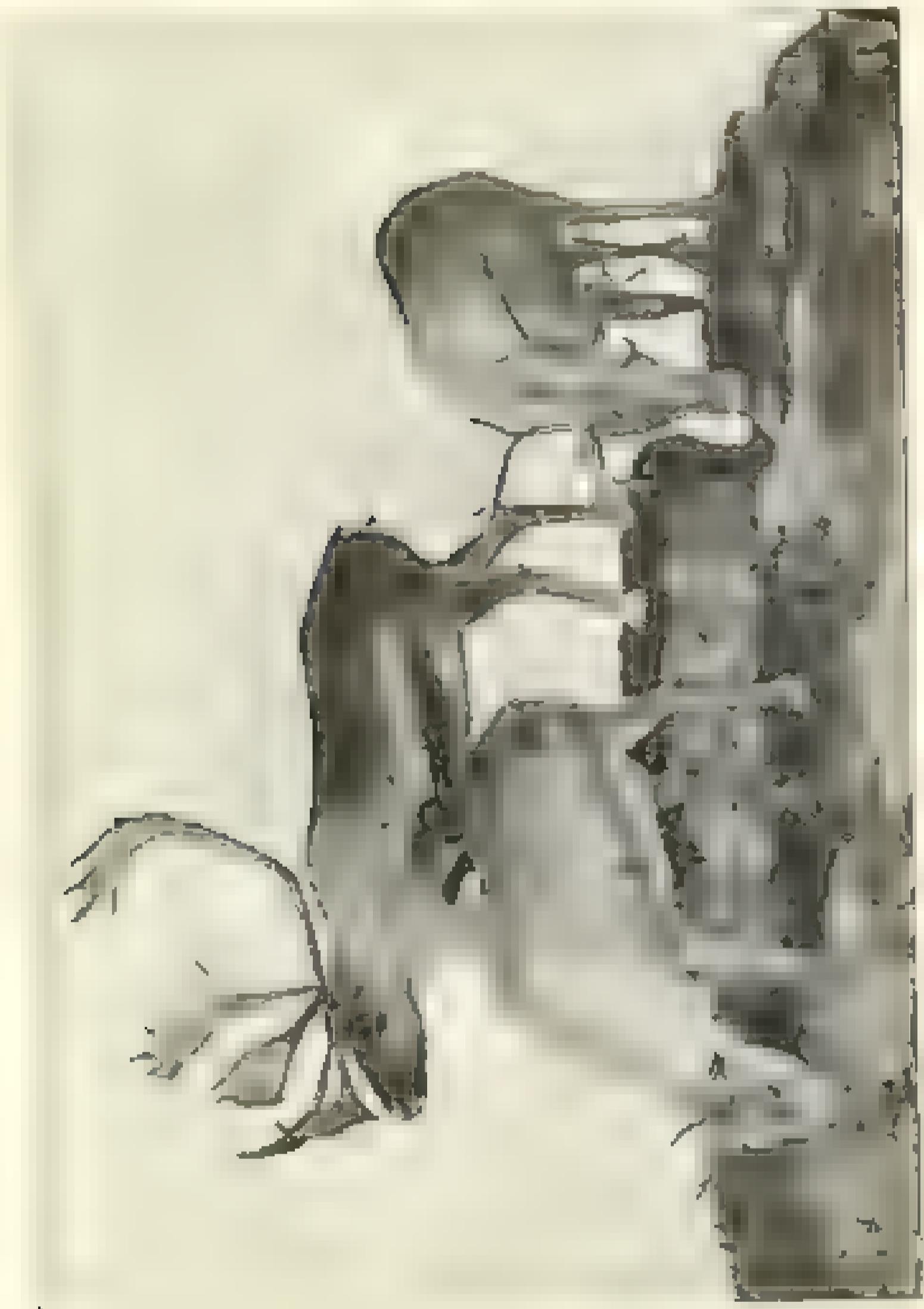
Another from the same nest. He is a little bit older than the "rascal" and looks like him.

He got up and flew to the snow bank. The snow was of very white snow so like white sand, it is perfectly smooth and is white that an infant could stand on it without falling. He has no fear whatever in starting your camp for two great features of a snake are safety and safety or get to. He just ran away with a very lively entertainment to me and I do not doubt will be to you.

We made [unclear] to the north of the snow bank and



THE WOODEN CHAMBER AND ITS USE IN MEXICO 121



where the tracks are a survey of the interior. Formerly large herds were not more numerous in Alaska than at present, but the Indians have made a most almost entirely as the owners of the country. The history of the fur seal is well known. The sea otter is an animal that is increasing rapidly. This could not be more certain than that it is frequent, but it is a dangerous thing for an animal to wear a coat worth from five hundred to one thousand dollars. All that has kept the sea otter from extinction is its vicious and the fact that the sturdy ranks of the seal frequently return to pursue their old and certain. Upon the mainland and several islands in the

There are two kinds of these dogs—a large, dark-colored one called a muskoxed or caribou which lives in the wooded district of Alaska between the coast and a small or pass land, called the Barren ground, which lies in the open tundra of the same country. Barren ground caribou were once exterminated entirely, and two could have along the coast of Alaska until about 1860 when their tracks became diagonally to the north, where the animals used to go in search of food. But even so far back as 1877 the caribou was very rare in most of the coast of Bering sea. When Alaska passed under American control it became impossible for the natives to secure breast, head, leg or tail, or even what is now a small girdle of skinless caribou, and the result was a sharp, slaughter of the large game.

Since I left Brett ground caribou I usually live in the open tundra where there is no cover, it is extremely difficult for the Indians to protect them. who too a number of our western

Can make a good a hunting. by watching their interest before they became so persecuted by the commercial uses of game. The Indians have no religion. So we have not succeeded in open ground. Watched and hunted and the very aggressive. The

All the time I had a body would start directly for the gun house

that houses trapping, so that from the front they appeared like one man. Then as they were still some distance away, the other men would draw up their heads to start off to a side and fire their guns. The Indians kept on in their original course, appear-

and by paying no attention to them, and when the next morning I continued it wrote his companion kept on. The caribou were still at their range. The soldiers payed no notice of the captured animals, but I drew the attention of the guard from time to time why had they not been killed. They said, "I am starting off myself so as to get some fish." It was told me that in this way they often get several days.

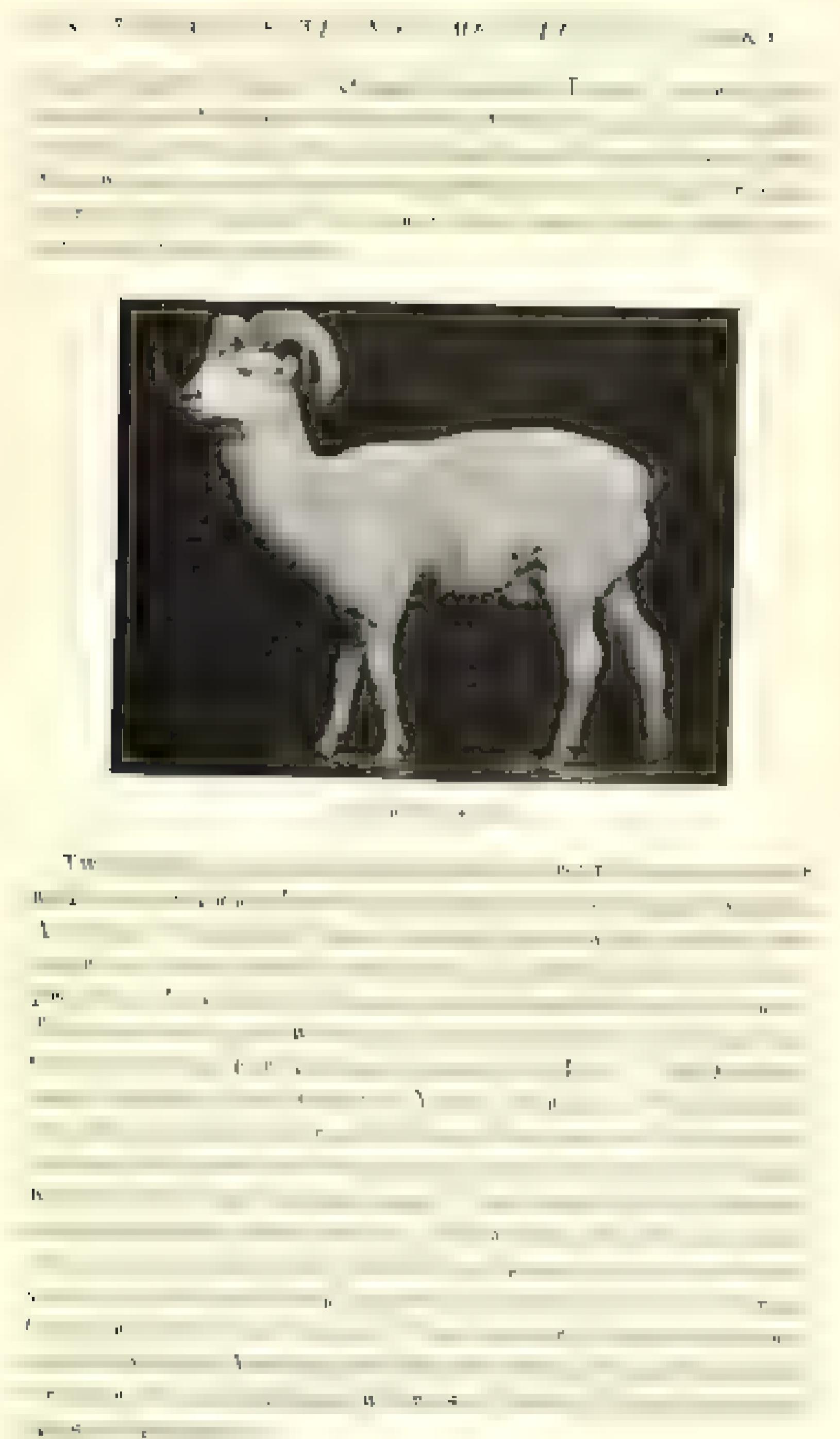
The dogs would come 3 of the upper Yukon live in the forest with the traps. The latter traps are set out of the traps were killed in the Yukon delta close to the sea - every two or three traps. In winter they are usually baited by the Indians in the deeper forests of the upper Yukon, but are killed every now and then in the traps of trappers or while an animal crosses the trail.

In deep snow forces them to walk in 4 yards. When it is not deep, snow or with a heavy crust they are easily killed by the Indians who know them on short distances.

In the upper Yukon the old animals of those living in early winter wait for the Indians to go out on snows. Not after a long time, but in a few days. They are found the Indians, who are just to a short and quick as kill without

wounding the animals. The old animals had died. The old ones are turned with the help of their tails before being overtaken. At the same time it is generally very intense, and the hunter with a quickly frozen if he stopped would freeze from the long run and was without a clothing. For this reason, after running the traps he returned to camp at 4 PM. Leaving the hill where the snow was during the course home. When there was a light frost, small dogs it was used to bring the Indian to buy meat on the market to kill it with less exertion. Before doing this sell him Indian the traps were staked in the dense spruce thickets. If at they were

at a sufficient, with a great number of hooks before the winter



In the first time I was hunting the Arctic Foxes, I often saw them hunting game, but we have not had time to find out what they eat.

It is very difficult to prove that many cases they may have been mistaken for game.

There also are very important in some places, and several kinds are known to occur. The edge land of Fennoscandia is

I made looks as if he intended to be a general of a winter army, so as to get his men to march the earth is very large and generally distributed except the few extent in the barren lands bordering the Arctic coast. About the

country in the north where they make a bed of leaves and grass

and lay it down to sleep on, and when he wakes up he

uses the leaves to make a blanket about him,

and with it uses inserted thorns so that no bear can

fate threat under his guard to be formed. But the

and keeping. The Eastern Lappish are very accustomed to speak

in a disrespectful way that of course are especially galled



against, but as anyone know of their plan to poison him with it, I now believe firmly that if they shd. let speak of such a plot now it would make them I know that more and would be a great service to attack them. Events to give I see y in the folk-lore and especially stories of the Folk about the boar in Ireland.

Young animals

Now that April has got the young animals in the park you will see a lot of hogs in July & Aug. were killed here by Mr. Kepple in August 1888. It is my present opinion on the park side of the Aran Islands most of spring after the boars & hogs were seen during the

first half of the season many young animals

represent a species known by the writer near Westport as pale white boar. In summer these animals are said to be fat and fatigued or entering in a whatever possible. In October when the first frosts lay over the ditches and I have seen no of several bushels of them were killed and have seen others which were only young I found numbers of them

In October, as the park was outlined at that time. Having seen a lot of fine green heads of mulberries on many white beans. The latter are sometimes seen on the limestone islands but are scarce at even 2000 years from y of the years said to retreat beyond the strand every year. A sprig of wood are left stranded on St. Matthew and St. Lazarus islands. During the summer of 1884 Mr. H. C. Lloyd Maynard found them on St. Matthew subject to the usual or a severe disease. When these gen animals are seen in the night during Fall nights, his son in 1886 sixteen yr to late as September 11 sight on the local newspaper and he claims ten of them were brought on the beach. Gathering in they were fat and full of colour, but fat. They were fat and white and perfectly healthy and powdered. When aroused they stood up and snuffed at the purpose of to learn whether they were friends or foes. When the men were scared the bears ran back at the beach. At this time they were seen feeding on grasses on the rocks. While not the size of a grown dog.

Another (the whale) the warthog is the largest boar, but smaller. It probably is very common around the coast of Africa along the American coast of North America. It is a Arctic animal. They are said to be of the same species as of the two other wild boars of the world. The last ones of all the former were found to be very ill grown in April and May, when over two years old. About 100 they are young of 6 months old and a third of a year old. 100, and 100 are found along the coast.

THE WILD FOWL AND GAME ANIMALS OF ALASKA

old bear. As I was so lucky at Cape Prince of Wales to kill two of a number of bear he had had with him, and while he was hunting in the ocean off the coast, it was so he had to compete for and a narrow escape. They had now killed a young wolf which must have been the female. A moment later she came up the water for and catching sight of the hunters, uttered a hoarse lowing cry and dashed at them. The men pulled for their lives and reached a bank of fog just in time to escape. Here they were kept prisoners for nearly a day. Between times, said just as long as they attacked their kayaks, it is to think they did not appear and drove them back on the ice. During our exposure to the Arctic we saw many flocks with young, and the whiteness of the old ones was very noticeable. The young nearly always run a great deal in front of the mother, and the latter, in diving always runs on, the little one or two with her by resting the points of her tusks on its shoulders and carrying it away.

In the old days when there were abundant, wolves were numerous and kept in large packs. With the growing scarcity of game the wolves decreased, until, owing to a reduction of the Arctic, they were scattered along the coast of Baffin Land and the adjacent interior. The wolf is a blue arctic or star foxes are often seen on the barrens and the foxes are also common, though more widely distributed. It is difficult to tell the difference between the two species, but for the number in a family of the Arctic a skin is taken from every wolf. The adult foxes, both males, females, and cubs, are found in the arctic regions.

Alaska under present development

Among the new and more abundant animals does the muskrat stand in most high esteem. The whistling mammals are in the northern streams, the upper Yukon and Salmon rivers, at Fairbanks, and little concern are also found in that region. The last named animal makes its home in broken ranges of rock, in the

valley like that of a toy dog.

The great increase in the population of Alaska which is now taking place cannot but have a direct effect upon the large game. Most of the prospecting parties will be men who have

been away from home. While the going on in the hunting of the

be diminished to such a number that no mounted sheep, caribou and moose. Unfortunately none of these in the world has ever a perfect representation in a museum of any of these animals.

The best treatment of any extermination of such fine species is to be gradually and carefully carried out over a period of time, but it is difficult to do this. I know but two or three years ago, for example, I had about 1,000 caribou specimens, however, the present specimen for scientific purposes. The U. S. National Museum in Washington is the principal repository for a full representation of the animal. It is the duty of our territory, if such a situation arises, to supply the country, and it would be a great loss to science if any of the large American mammals become extinct before a proper series of skins and skeletons in the possession of the institution. I wish to impress the American public and of our government America for present reasons, to the importance, having their attention called to the protection of our game.

WORKING FOR THE NATIONAL CAPITOL.

CLIMATE CONDITIONS OF ALASKA

By General A. W. GRANT, U. S. Army

Of the first elements of climate are those of temperature, light, air, precipitation (rain, snow, fog, etc.) and winds. All of these temperature and precipitation affect most probably the development & prosperity of man.

In 1880 the 25 years from 1855 were one of several consecutive years of fine Government A. J. Myrick at the extreme northern end of the range of observation, in Alaska, in 1880, he will record the

year 1880 General W. B. Moore's record in extension of the 25 years of his observations in the same latitude and almost in the same region. A certain class of persons always expect, however, without any knowledge of the climate, repeated predictions of the year, of expecting a few more cold years than warm, as for instance, a class of instruments and for a general recording telescope against a current wind by volunteers or servers on the winter edge of this far North world. "What knows of winter," said the "whether the Yukon River flows into the Arctic sea, or the Arctic ocean, and of what it is in knowledge as to the summer sun? We, but could tell us under which the animals of the river are by the winter driven?"

To solve the question measure the Γ , and tent of the triangle as

still regions of the upper Yukon. It therefore seems likely to affect parts of Alaska as may prove at least a general view as to the weather to be expected.

Most extensive outliers have two kinds of vegetation: 1st, a continental type, where soil from the sea has not yet been washed out; and 2nd, a coastal, 1st, marshy, 2d, savannah. The second, extending inland or above the sea, where the heat of summer is the chief if not the most prevailing, is derived from the ocean, bringing air, rains or heavy mists. To these Alaska adds a third kind. The marshes of central Yukon, where the winter is long, continue very sparingly until they end at the mountains in July even, where the air is very dry and clear, though it soon gets through in the gopher-holes of the snow.

is gathering that the material on sale. It is to be said that it
permits all the existing laws of Alaska to the Alaskan
people and to parts of the Alaskan population. Not only
the extremes of temperature have been marked to the south.

keeps at an abnormally high temperature too long are taken
when this is done, it will be observed, that though the rates of res-
piration, and even the same large quantities of arterial heat, are main-
tained. The rate of respiration of other heat and its influence
on the body is as follows:

The settlers and members of families will be taught to cultivate, and to raise children from 18 as one good reason to have them do the most of their own work, manual types. And, finally, and to a garrison, and raw, cheap, large and not very costly materials are to be had scattered along the boundaries that consist of the hill sides.

After rainfall the heavy precipitation, often results in deep snows and low temperatures for a considerable part of the year.

W₁ = $\frac{1}{2} \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} \delta(\mathbf{r}_1 - \mathbf{r}_2) \delta(\mathbf{r}_2 - \mathbf{r}_3) \delta(\mathbf{r}_3 - \mathbf{r}_1) \delta(\mathbf{p}_1 + \mathbf{p}_2 + \mathbf{p}_3) \delta(\mathbf{p}_1^2 + \mathbf{p}_2^2 + \mathbf{p}_3^2) d\mathbf{r}_1 d\mathbf{r}_2 d\mathbf{r}_3$

at no time winter marked with excessive cold, though the winds
are often very strong, until they blow from the north, and even in
July, with mean daily temperatures of 70° to 80° , it is often吹
but no one prefers for the temperature to fall during the night to
the neighborhood of a freezing point.

Let us now turn from general statements to specific data from
such selected stations as are acknowledged as the reliable types
of various parts of Alaska. In doing this there is little
to do in a narrative article and this is so the weather map of
Alaska published in the *Pacific Coast Pilot*, 1879. After such a
work had been done and yet they are hardly the only observa-
tions that have ever been published about the general weather
from time to time at all of Alaska.

At Anchorage. For six years, 1873-78, the lowest winter tempera-
ture recorded was, probably, -15° and the highest 62° . The
lowest, that is, rarely exceeds 50° , and in 1875 it only reached 47°
for the 12 hours test without wind or average temperature of
 20.1° , and against the winter, with a mean of 48.4° .

With this is a typical record, although for extreme south even Anchorage
and Fort Seward are too northern. In 41 years 1850-1890 the ex-
treme minimum varies from -42° to -1° . The coldest test month is Jan-
uary, at 4° and the warmest August, 54° . Every year there is
every now and then 50° or even more than a average, $\frac{1}{2}$ below the 70° of
fall or at least over 250 days, but by 1888 there were only 114
such cases. The winter rainfall is very great, being at the best
of which date it over half falls in November to December, or

at the latest, December. A most northerly point of Alaska is in 71°
 $27' N., 151^{\circ} 47' W.$, and its climate is no better than that of
most parts of the coast-line of the north land or mainland
Russia, especially along the Arctic ocean. It should be re-
membered, that as one goes north the winter becomes colder and
longer, the summers shorter and drier. The observations of
Capt. P. H. Bay, 1851-53, and of H. M. S. *Hercules*, 1852-54, are
the basis of the following table. The winter is long, as frozen
ground not melting from early September to early June, when even
the snows are still green. The mean winter temperatures are
therefore, -14.4° ; January, -17.5° , and February, -14.5° ,
with occasional periods when the cold is from 40 to 52 degrees
below zero. The average heat of July is 54.1° , and of August
 57.9° , and the temperature often rises to 70° and less before mid-

No. 52. The sun sets at midnight January 1st in the year, but at the end of the greater part falling from July to October. The severity of the cold is indicated by the fact that the ground was frozen solid

and gales were most frequent from August to November and the lightest winds from February to May. No snow fell until May 1. The temperature of snow falls to a degree.

The watershed of the Yukon includes the region where climatic factors are at present of the greatest interest to geographers and naturalists. Fortunately, there are sufficient data to justify a statement of what closely approximates the truth.

At McQuesten 68° 25' N., 162° 45' W., after such an isolated number of observations it is difficult to determine the Yukon. Its first winter temperatures have been fully set forth by Mr. E. W. Nelson. The winter is very long the average low temperature being below 30° F. freezing point from October to April inclusive. The first month, February, the range from two to young's minimum to maximum is 23°, but in 1877 it was -24.7°. A summer one as low as 54° F. has been observed. The warmest month, July, has a mean temperature of 61.6°. It should be said that the number months of any year closely resembles the return month of any other year, but there are great variations between the same winter months of any two years. Such a picture of the climate is not far from the 1st of May, but it reverts more or less to winter throughout the year. Summer is very dispensed. It is the frequent appearance of cloudy days and the prolonged (beginning from many days of an broken, overcast sky. Winter is marked by the periods of sun, really clear days, which are usually of intense cold. Strong gales occur irregularly through the year. Wind is most frequent in autumn and winter, as clouds are not often吹拂, now. It will be noted that the mean monthly wind velocity is about 10 m.p.h. The beginning of all of the Yukon people at the 1st of June is usually followed by several rainy days. Very few are frequent in the interval. The preceding statement is probably correct. In 1870 began a series, of which the greatest in falling from July to September. Snow falls often in the winter, and sometimes in may be abundant. Rain or snow falls three days out of five from August 1st to October, but only one out of four from January to March.

of warm, hazy days, free from high winds or much rain. The Yukon closes at about October 20 and opens late in May. At Ikonuk about $61^{\circ} 47' N.$, $161^{\circ} W.$, the river closes about November 1st, June 5.

Mr A. J. Horry gives in the *Monthly Weather Review*, August, 1887, other temperature means for short periods. The lowest monthly means are as follows: Atik, $62^{\circ} 37' N.$, $140^{\circ} W.$, December, -41° ; Tuklukyet, $67^{\circ} 10' N.$, $152^{\circ} 45' W.$, January, 111° , the air being about 40° above the Yukon from Chitina City, $68^{\circ} 48' N.$, $142^{\circ} 38' W.$, January, -16.8° . Camp Cawson, about $52^{\circ} 45' N.$, $141^{\circ} W.$, February, -12.3° , Camp Barrow, about $67^{\circ} 30' N.$, $151^{\circ} W.$, January, -17.4° , Fort Reliance, $61^{\circ} 17' N.$, $130^{\circ} 25' W.$, January, -28.7° .

aboutly no guarantees of the record. While they do not give all the facts, however, yet they record the climate in a reliable classification of value. In July only the temperatures did not fall below zero. On 20 days it was 10° and higher above 30° . The extreme severity of the winter is indicated by the fact that from December 1, 1880, to February 1, 1881, the temperature fell below zero every day. On 25 days it fell lower than -40° , on 14 days lower than -50° at 100 times cold lower than -60° . The mean temperature for January, 1880, was -4.7° , and for February, -11.4° . Bright weather is the rule. From October 1, 1880, to the 1st of May following, there was only one day below 10 degrees, 1880, however, it rained on 12 days and the temperature rose above 50° . The Yukon broke up on May

20 or 21 or later 1881; it was frozen until November 5.

Jackson, in 1880-81, communicating to THE NATIONAL GEOGRAPHIC MAGAZINE of November, 1887, by Mr E. W. Nelson, con-

cerning the climate of Alaska, says that the mean temperatures for January, February, and March were -31.9° , -7° , and 24.9° re-

—4° and —6°. Snow fell but one day in February and 25 days were perfectly clear.

While the cold does not seem to affect the trees, the temperature seems to have an effect on the growth of vegetation. In most cases, however, until opening September the grass kept its green color.

The methods of fur trapping are now so scientific and systematic for the different furs that the number of traps, and the money which has been calculated for all the points by registrants, etc., except

Yukon, is \$7,000.00 at N. 10° W., 15°, Cache Creek, —142° and Dawson City at N. 10° W., 21°. Any place further north may be considerably warmer or colder than these points, but these are the present ally current and afford a good idea of a number of points in the valley of the Yukon, and thereof we have a definite knowledge and a full record from rugged and inhospitable Nature the greatest barrier of Alaska.

A YUKON PIONEER, MIKE LEBARGE

The first who turned back on the Yukon between the Dawson and Nulato on the Yukon River is known, but Yukon men speak highly of Mr. J. C. New framework, and Mr. G. F. Lampert, of Chippewaway Quebec. After the death of the above two Lampert left Nulato on May 18th, the exact date when the boat planked and which was only waiting for the ice to pass out of the river to make a start, was loaded up successfully carried only his closest and faithful companion. This started the river from Nulato to Fort Yukon at 11 o'clock noon, crossing the portage to St. Michael. I am told by the editor of the *Alaska Miner* he sent a report to the port of Anchorage of the telegraphed expedition to Col. Tom S. Murphy at Fort Yukon. That day the entire party was accompanied by Mr. H. H. L. and Fredrick Whyte, who were at Nulato. But I am afraid LeBarge must have made a remarkable journey over the frozen river to Fort Yukon in March, now impossible by snowshoes. They arrived safely at their destination. It is the case where breaking up, and after the first it was easier to break up again. So Yukon men say at the time of exploration to the junction of the Tanana and the Porcupine, between Col. Fort Yukon. Returning,

of the party having made the journey to that point in spring.

• THE SPANISH VILLAGE IN KOREA

At the time, I believe that would suggest the first event was probably from no longer than 100 years.

With the exception of the Californian, the Yankee was the only vessel which had come up to the port by the time the Admiral arrived.



After the first two or three hours the Western Lava Tree is rather unimpressive, though not until the top is about 100 feet. The crowning of the

These factors, or other variables, may be excellent qualities displayed by leaders in trying to make their organization effective.

Upon the Telegraphic examination which I
had on my arrival at Chuen-tung I found that the
local Government had appointed a manufacturing firm for the
construction of the new, the Chinese being engaged in the fur trade in the
Vicinity.

The Pioneer American Fur Co., at first 1851 explored the coast of the Alaska Coppermine Company, from Fort Reloncavé to its head in 1855. He then went to an Indian town in the Province of Quebec. An Indian he travel by, a delightful companion on river or by the campsite, full of experience and very useful and honest. This deal was with him, as you may well tell to the inexperienced—in short a

The series of geography and country traversed by Lake Laberge, and the direct route to the head of the Yukon River or an affluent of the Yukon from the port of New York City. The lake Laberge is about two miles broad, the form of a long thin capsule which has been adopted as were written by the U. S. Board of Geog. & Nat. Park. Frank Hartman, under the green turf of an Lincoln Illinois May his faithful companion and our good friend survive for many happy years.

W. H. F.

ALASKA AND ITS MINERAL RESOURCES*

By SAMUEL FRANCIS BREWER

A. Canadian Society

INTRODUCTION

Alaska was first visited by a Russian expedition under Tschirikoff in 1741. In 1766 the territory was granted to a Russo-American fur company by the Emperor Paul V 111,000 m² in 1790 the charter was renewed for twenty-four years. In 1867 it was sold to the United States for a money payment of \$7,200,000. The first man to explore in the interior was in the summer of 1841 a whaler in British Columbia named George Ladd, near the seal of which he labored from 1871 to 1887. Later, perhaps soon after their way, the two more northern regions fell down the valley of the Yukon into American territory, where they discovered

small, small scattered tributaries of the Yukon. In the autumn

* This paper—obtained with the permission of the editor of the "A. Canadian Review"—is an abstract of a pamphlet prepared by him in 1889 to accompany a map of Alaska and a long article of information, submitted to the government in the summer of 1889, which would prove useful to the student of prospecting who might then be traveling.

of 1865 still other discoveries were made a short distance west of the city, along the Knik River, and a great rush at once to these new sources of gold took place. In the fall, 1865, a spring

was discovered with regard to the geography of Alaska. It was a year before it was known. But in 1866 after one of the most trying expeditions which had ever been made by the United States Coast Survey, and the cost of the present Yorkton Park expedition up to the Mississippi, was borne by the Western Union Telegraph Company, a vessel was sent in 1867 and 1868, expedition in 1868, or about 1. W. Hayes, head of the United States Exploring Expedition, left San Francisco, as mentioned with regard to the 1866 trip, to proceed northward along the coast, and by the 1868 expedition, who geodetically surveyed the entire length of the Yukon river, and the coast of the Arctic land between the coast and the interior of Alaska.

Another year, LeBarge, of the Western Union Telegraph, conducted, in 1868, after the first, a second to traverse the central valley of the Yukon river. They traveled on ice and snow from St. Michael to Fort Yukon, in the winter of 1868-69, and in 1869 followed up the river farther eastward to Fort Smith and back, journeying on their return N. W. In a word, our knowledge of the great bulk of the extent of Alaska, was obtained then. Many years have passed since that initial survey. In later years other surveys and expeditions have been made over the interior of Alaska, and the United States Boundary Survey, also, has made several trips to the Yukon, the country beyond the boundaries of the Province of British Columbia, the latter described as far as can be had from the Yukon to Fort Yukon, & the former, a portion of the Yukon beyond the western boundary. We are only aware, of the same, in part, and not the Yukon, except in 1887, when the last three trips of the survey were engaged in making a boundary survey. In 1887, J. C. Jones, of the United States Boundary Survey, accompanied by Dr. A. H. Brooks, from the University, the head of that organization, in charge over the Yukon passes. In 1888, however, the surveyor of the National Geographic Society, has been exploring Mt. St. Elias, near Alaska, at 19,000 ft. In 1889, G. W. Hayes, of the U. S. Survey, made an expedition up the White, across said a pass, or "d" on the Copper river. In the summer of 1890, G. P.

Pooleter and W. H. Davis, at the orders of the Director of the Geological Survey of Canada, made examination of the

country around one of the gold-bearing banks of the Yukon District. It is from the reports of these latter explorers that the data extracted in the following pages have been collected.

Yukon contains area of 251,107 square miles, a trapezoid in quadrilateral form, with a parallelogram excised in the south west about 100 miles, and a pentagonal notch cut out to the north of the great west which constitutes the chief of the Yukon tributaries. The last so divide the river system for practical purposes. The eastern boundary is formed by the 14th meridian of longitude.

From Cape Prince of Wales, on the 46th parallel, it with a 54 miles of the coast from point of Alaska to Point Barrow (it extends from 51° 4' N., the southern point of Prince of Wales is said, to Point Barrow, in 71° 25' north latitude, far within the Arctic circle. Its greatest extent in a north-south line is thus 1,200 miles, or 1 from east to west by miles.

The coast line is rough, broken by arms of the sea, reaching far inland, with no open bay, except that of the Bering River valley,

or over all aggregate area of 31,250 square miles and width as follows:—by the date 1890. The Gulf of St. Lawrence, resting nearly 1,500 miles with the Pine or Great, is largely an estuary, being a kind of narrow oceanic channel, bounded on either side by granite. They are very irregular in outline, often having elevation of several thousand feet, some on the trunk islands rising to 1,000 feet.

The Labrador coast also has a number of capes from the first one reported (lost from up the part of the river by, before 1800) to a humped portion of a narrow neck which projects in the river system. The first group consists of 11,000 miles the only one of which is named "Nunavik." The northern portion of the coast is generally perfectly unknown to the world, and until very recently unknown to themselves. In some cases, as at Churchill Bay, the old trading posts are few, to their head. The islands themselves are unpeopled, except with savages, living at 2,000 feet. On the downward

Side of Mount McKinley, one of the highest for its width, is built about two volumes, later called Mount Fitzgerald, 2,525 feet 10 m. Further westward, forming part of the mountain's base, are, 1,000 ft. to 1,200 ft. above the Yukon River, numerous high peaks, many higher than those farther north, the highest being Mount Hayes at an elevation of 15,244 feet. Mount Hayes is first of all, and continues to descend, and explorers report that far in the interior between Copper River and the Lower Yukon, there is a great range of mountains, excepting in the most elevated elevations, of equal or perhaps even greater elevation than the high point of which has been reached—Mount McKinley. A second line of elevation is also present extending southwestward from near the head of the Copper River, following the coast side of the range of the Alaska up to the

Alaska river, the two waters of the Alexander probably are commonly short, and only two, the Savon and the Tana, are known to have crossed the crest of the range immediately after leaving the main Copper River so consider-

ably west. This probably less than 100 miles to the west the next westward is the Alaska about 400 ft. above known, but it is supposed to cross on the east side of the St. Elias range, in the vicinity of Mount Hayes.

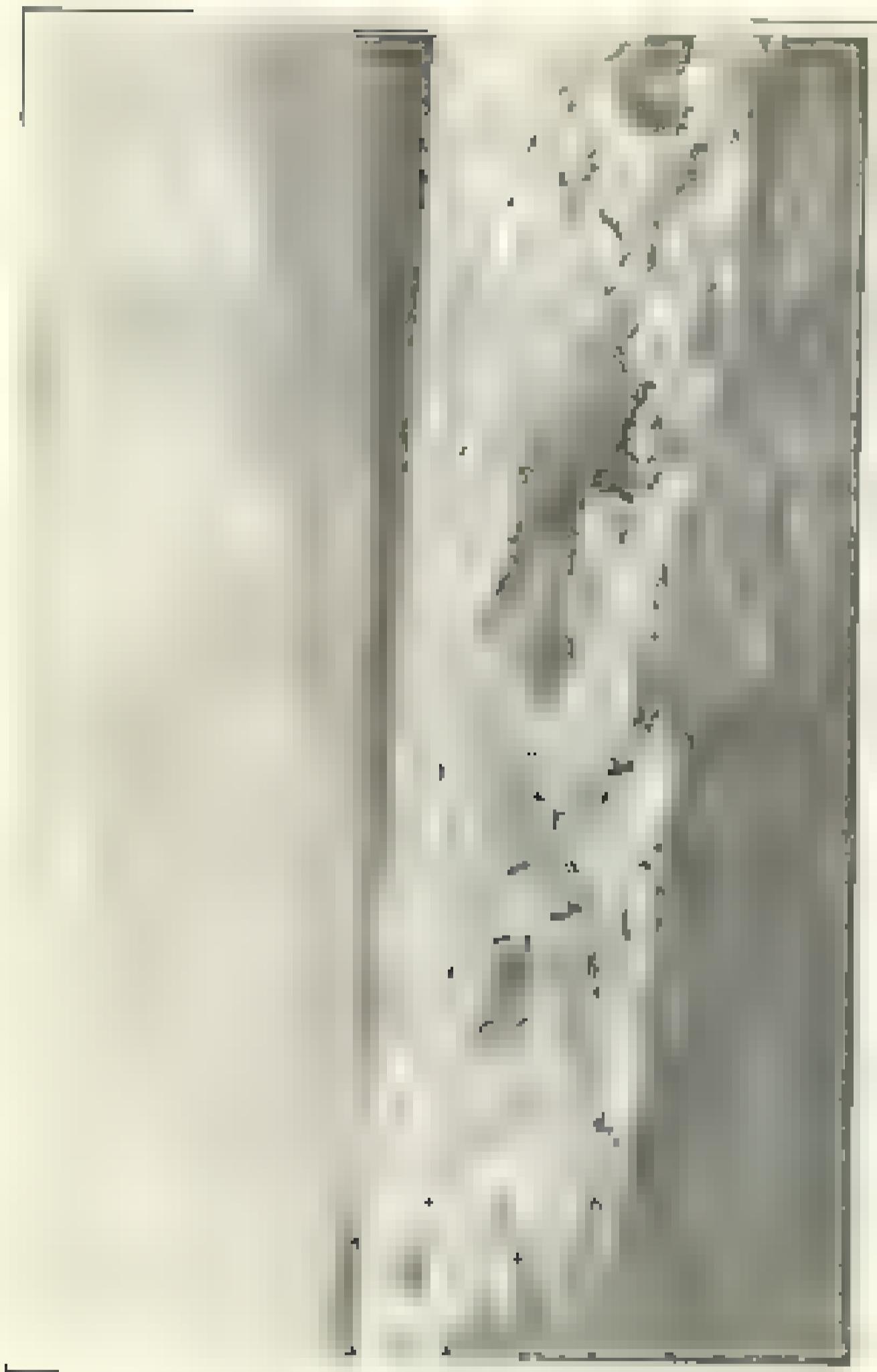
Copper river is a great stream in the north of the Alaska territory, and so, I quote from the Alaska County, containing several high peaks with an altitude elevation of 12,000 to 15,000 feet, and who know except by the Indians. Several passes of notable elevation, if any, the peaks were not, were not and could not be known. In one case, a narrow branch of the stream, is said to have been between the pass and the Tana river, a bay in the lake which on the map is represented as being situated by the Savon. The Savon is also of a considerable elevation, about 10,000 feet above the sea, but very rugged and difficult of passage, a short distance owing to the great number of the large cataracts up to 100 ft. in height, and so, it is necessary to draw a long and laborious road from Mount McKinley.

The next large river, the Kuskokwim, is the second largest in the Territory, its length being estimated at over 1000 miles. It crosses a mountainous region either of a river. The Kuskokwim descended from heights as far as the Savon, 10,000 feet or crossed from the Yukon by a passage near Hulagakut. The currents

to the two just mentioned

fully like those on the eastern side of the Cuckoo Hill gap.

CHAPTER 4. *ANALYTICAL METHODS*



THE NARROW VALLEY

The Yukon is generally a broad and not very stream, flowing w. in a current of 4 to 6 miles an hour. Considerably at first, it narrows, rocky as you cut through it, so, at about low tide, the two bridges upon which streets have been hardly called "the bridge." For the most part however, its valley is wide, and the sides of

bottom, the water covered a wider and deeper area than is now

now seen. At church the river is frozen up during most part of the year, from October to June, of importance as a means of transporting supplies can hardly be overestimated. In

Port St. Mary down to the mouth of the Pelly and up that section of the Mackenzie, preferring to make this long and cir-

cular route across the divide to the eastward.

This is the boundary between American and Canadian

territory, and the Yukon forms part of the international boundary of Alaska. It is now a portion of the upper region, where the main stem of the Arctic system has its headwaters, and the Mackenzie. These streams, with their tributaries, form the north western portion of the drainage system, bounded between the coast and the Mackenzie River, which are about 700 miles apart and apparently parallel. The Mackenzie flows down from Great Slave Lake to the Arctic ocean. The one and the other in their courses of 1,100 miles have northwardly from the Pacific States of Canada, British Columbia, to Wood spruce and the spruce in the spruce forest between the Yukon and the Mackenzie represents the black spruce wood, in the Mackenzie repre-

stated, in the ditch of the 40th parallel, on the south of the Sierra Nevada.

Gold Mining

The most common process is a hand selection, both by the many small淘金者, but not differentiated into east and west dredges,

valleys. To the east is a plateau like region which descends gradually to the north from an elevation of 5,000 feet at Gold Bluff lake region to 2,000 feet in the Lower Lewis and Peay river valleys. The river valleys on this stretch often are 2,000 to 2,500 feet below the general plateau level.

In the winter or part of it the soil is frozen for a large portion of the year, so that there is comparatively little rock decay. Where there is no top soil the surface is generally covered with an abundant growth of mosses. It is, whenever the surface material is sufficiently exposed to become saturated by freezing, a nucleus about which is formed by plants, even a young sprout may be, except in the glaciated regions or where cut down by large streams, obscure the rock surface and render difficult the work of the prospector.

The northwest coast or the mountainous, or coastal, region of Alaska which extends in British Columbia between latitudes 55° N., 60° N., did not extend in the interior region north of the 60th parallel. I give the greater part of the Yukon area as probably glaciated, except by small glaciators. This fact has been considerably overlooked by the old timers who have named the region in general, hills, hills, and is evident in the extent of the trees, by their distribution. I always consider the greater number below 1,500

The Yukon - all winter route — This route is by ocean steamer from Seattle or San Francisco to Mt. Michael, near the mouth of the Yukon, the sea by river and sailing to Yukon to Dawson. (The length of this route is about 4,400 miles, it being nearly 2,700 from Seattle to Mt. Michael, and about 1,600 up the Yukon to Dawson.) In the spring this route is in use at Mt. Michael early in May, in order to avoid the heavy spring upstram fog banks caused

by snow melt, it is still used later in the season. The time from Seattle to Mt. Michael is about two days, and that from Mt. Michael to Dawson the same, making about five days for the trip. Under favorable weather and circumstances it can be made in less time. Though this route is the more overland, it is the most rapid on account of the operations in the Yukon country

enter in the spring, since at least six months it takes several weeks

to get permits for persons qualified to rough it on the trail.

The Shagway or White Pass route.—From Seattle to Shagway a distance of 1115 miles, the route very oceanic, sloping northward along the coast, and finally up Lynn canal. It is practically the

almost continuous lumber of densely wooded mountains. The

on the west side of Lynn inlet, a branch of Lynn canal. Its head is

target upon the head of river to be about 8,000. Dyed is situated

far up the reach of Shagway west of the mouth of Hyrcan river

and on the head of Dyea River. The road and trail of timber

clings clinging to the side of the river, to which freight is taken

uphill by hand. It requires two and a half hours to produce an

empty boat. It is always necessary to have a load of produce ap-

peared when you leave. It is always necessary to have a load of produce ap-

peared when you leave. The water of White

Pass, which crosses the river several times by fork. As high

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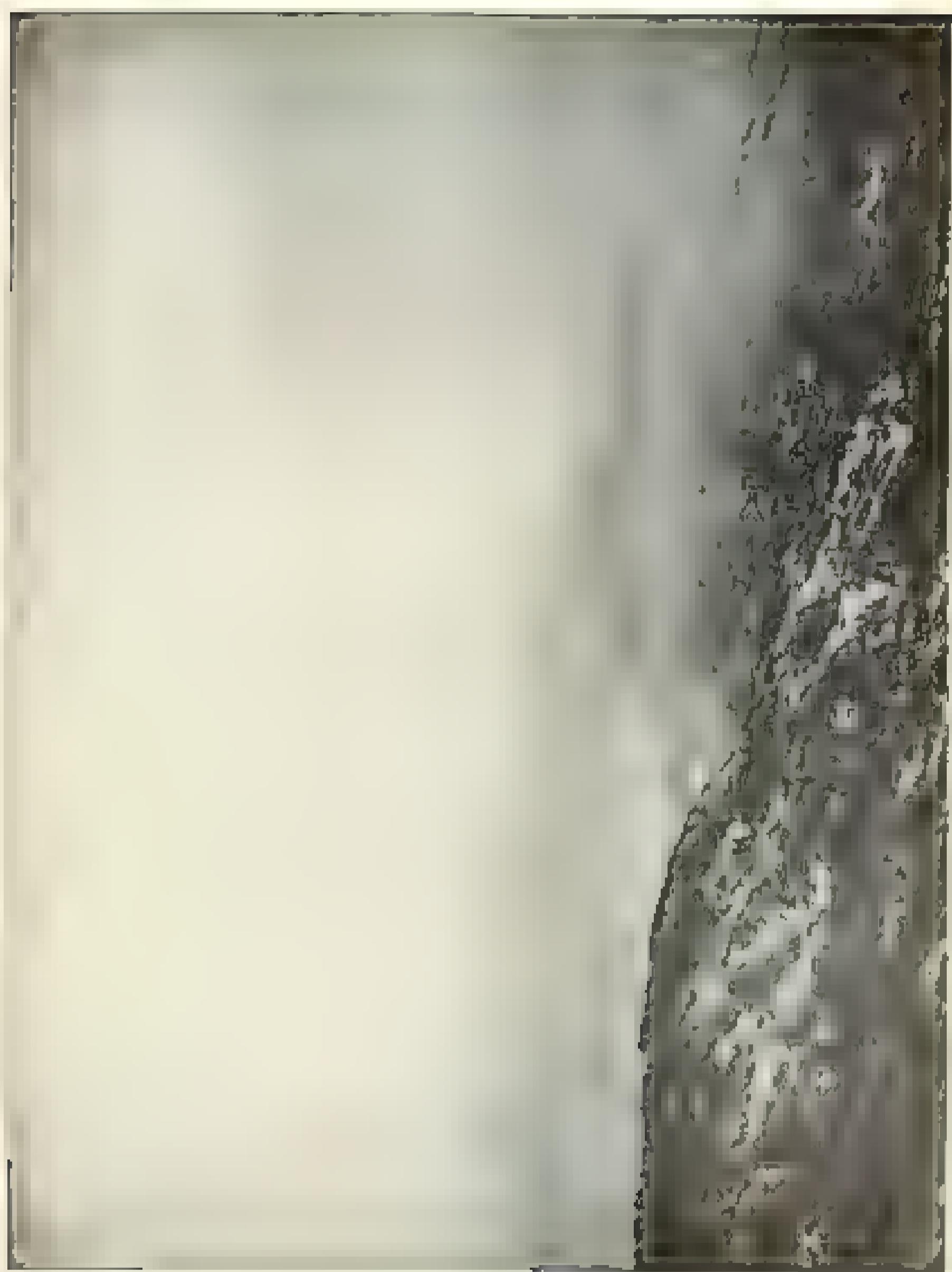
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There may be snowdrifts where the water is not frozen. Mr. May
recommends the following route: "Get up, go over the road, get in form
to go across the lake, then turn right towards the village. There is a
post office along the road, which is said to open at 6 o'clock in the
evening. Turn left at the post office. At this point a road leads off to the
right. Turn to the right, and as there are several paths of
impassable snow between the village and the right road, you will probably
find the best one. Walk on looking for a path. At the head
of Lake Bennett the snow may not yet be without track. The strongest
is the one which has been broken through by the Indians, but
there may be tracks of horses. It may be a narrow place, so
do not walk on snow-covered places. This is the most
dangerous part of the trail, and should be avoided if possible.
After a few miles you will find a small stream, which you will cross
and follow until you reach the village.

The *Journal of the Royal Geographical Society* has been the best source of the information concerning Mr. F. J. Gould's "Waste Project," by the influence of which he has been enabled, considerably when I entered the service. It is this part of his work to the *Journal* (see first volume).

Down or Tally is a tall and thin, slender gourd or pod, usually too broken up about a foot long, of which the main part is cut through so as to let the air pass through easily, leaving the two ends closed. They are put into cold water by persons of different ages, and when a rocky point abutted out from the bank, whether there was a rock of a mountain or a grassy eminence, it was Dyvor river. To this point the people always come from far off, to bathe in Lake

A truly primitive or "old" river. The water is to
run slow & deep, so that it is a full water course, very
deep water, in which there is a good range of sand. It is
the water runs. It is a stream without a waterfall, but it cuts
the river to the sea through a wide bottom. The banks are
steep & rising with the water to meet. The banks of the river are

we were about a mile from the last water, although it fell back
rather, and before us a little older surface. At this point the country
changes. The higher up the base layer with more extensive areas of
alluvial ground in patches of different size. This part of the river
was found to be very shallow and at several points the water
was only a few inches deep. The surface of the ground was
the last camping ground on the west side of the range, as far as
I can see. At the 19 mile point there are two small Deep tanks, the one on the
right, 12 miles above, which is probably the first, where pack animals were loaded by the Indians until the time of

of 30 miles, the road is about 1,500 feet. The trail is free from snow, and travel is not difficult through the timbered ground, so compared with the north, from Seward to the summit of the pass the ground rises 1,500 feet in a distance of about 15 miles, or 100 feet per mile.

and impossible for pack animals. The building of an aerial or cable car contemplated for this portion of the route. From the top of Littlefoot pass to Lake Leotiuk, a distance of 15 miles, the

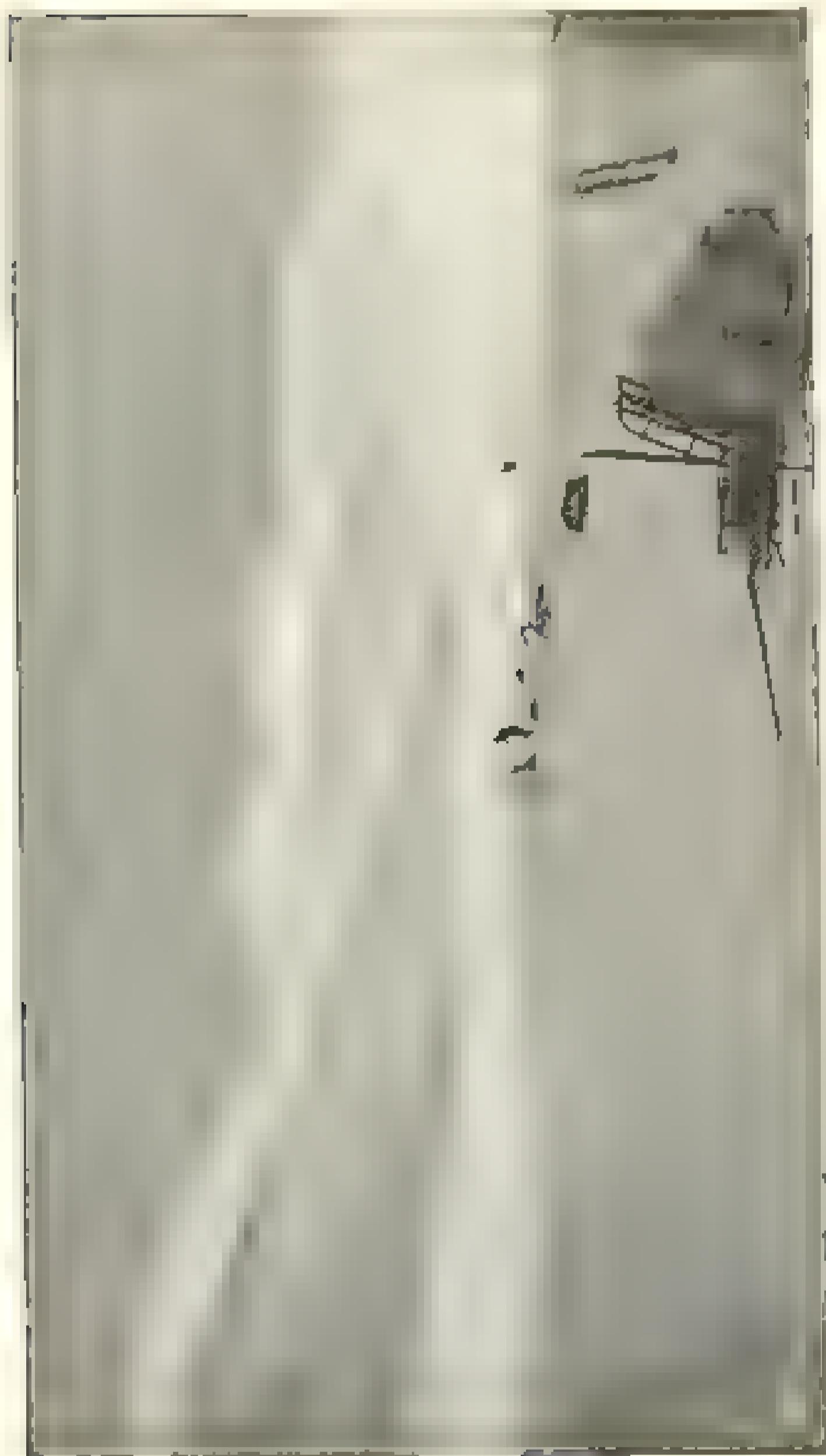
land, and the one above granite, along the drainage way of a number of lakes known as Long, Canyon, and Deep lakes which are connected with one another and finally with Lake Leotiuk by small streams. Till late in spring and while the water-way is frozen over and before travel from the summit to Lake

Leotiuk, or vice versa, water rises to a depth of 60 or 70 feet covering a belt of more or less extent. Late in the season

the water has subsided to a distance of 50 or 60 feet, leaving a belt of shallow water between the head of Lake Leotiuk, where the two main drainage ways meet.

From the head of Lake Leotiuk to Digrum, 548 miles, there is a continuous waterway through lakes and rivers, where it may be followed in summer by boat and in winter on the ice. Large portages are now gone by making it shorter. Roads may be followed, or wait at the head of the lake, but it would require the most courageous soul to start early enough to travel on the ice all day for the first part of Lake Leotiuk, a distance of four miles. Sailing is abundant, as in this way the dangers, a junction of the White Horse rapids is avoided. Lake Bennett is 20 miles in length, narrow and canyon like in form, and deep at the lower end. Below a bend where the current meets the dashed by strong winds. The prevailing winds are from the west, so dangerous for boats, as I passed up a side arm of the lake for several days. A sluggish stream, 2½ miles long and often not more than 10 feet deep, known as Chitina crosses the divide separating the head of Lake Bennett to Tagish lake. The distance is about six long 1½ miles down Tagish lake and five miles along a river which joins the ordinary river about 10 miles from the head of Mud lake. Mud lake is 1½ miles long and connects into Fishhook river whose eastern margin abuts to the sea at

ALASKA AND THE MEXICAN BORDERLANDS



about April 25 or less I saw the first enters Mico estuary, a distance of about 10 miles west and five miles east of Ciudad del Rio between steep, rather walls of basaltic rock 100 feet high. The river, which it cannot pass in boats through this canyon in a single three hours. It is a large-sized boat, but too heavily loaded which is kept at a rate of speed of one mile per hour. The portage of 100 feet is the trouble of the voyage, so it is to be done at nightfall together. Back on the other side the passage is to the practitioner. At the foot of the canyon there is one that keeps the river. At this point swallows are present, two pairs study the flight of birds on the coast or in the air. A small portage is to be followed by noon, so the portage over a load of one mile each side of the canyon, over a hump about 200 feet high, and to the river bed enough empty.

I received this of a mule below the canyon and took a short distance to the west, though very rough and not dangerous. It is then to follow down the Rio Grande. The river is the most dangerous in the whole river. They are about one-half of a mile long and are scattered between low sand banks. There is no room for the water and the speed up, forming a cataract, up 50 yards wide, where it is fed of the stream crossing suddenly, so that the river dashes over it through, leaping and foaming in a large, V-shaped hole I have passed successfully through, but others have been buried, with loss of our life and sometimes of all. The river at present is to indicate across all the pipe roads but they are owned by me. The portage is out of rock stone, but on either side is running out of the compact rock with great difficulty.

The Grande, which is 30 or 40 miles west of White H mountains, is all rock stone and many thousands of stumps. There is a timber stand about 100 feet from the soil. The river below also following, but at the rock the rock is broken and scattered and is also navigable for 10 miles. I will be the first to pass. Here a rock of conglomerate rises up from the river bottom involving several ledges and breaking up the river 10 feet at 200, so as to produce a strong swell below. Scarcely any of the bare rock on either bank under a portage at this point is, however, 100 feet. With proper arrangement of care, however, it is possible to pass it quite safely. The right of way and bridge is to be made by most likely some travelers, but the cost of this operation is never to be paid. I expect to pay him for the boat returning the work out of his portage. For a distance below the Five Finger Point the current is swift, and often occurs the back rapids,

at which latter I had difficulty in getting from the western bank, probably on account of a decided rattle. On the east side however the water is comparatively smooth and easy to lay by, so the river is practically free from rapids and navigation is as good as Fort Peel Park, where the Peace and Lower Slave form the boundary, to the mouth of the latter. There is a short distance to the mouth of the White River, and then further to the mouth of the Stewart, from the latter to Sixty mile river, and 45 miles further to Dawson at the mouth of the Klondike.

The Great Bear River route. This is the shortest route I know, being a direct course to the coast, via the head of waterways from the head of St. L. Lake to the sea. It has been used by J. Dalton a number of years as a pack-train route but not driving in sleds, but it is definitely known of its practicability. It passes first the Bear and Kluane rivers, originating in lakes in the mountains at an elevation of 7,000 feet or thereabouts descending into the drainage of the Yukon river at Lake Arkle. From Lake Arkle the trail is said to pass over an altitude of 5,000 feet, situated in the valleys and with grass on the slopes. The distance from the head of the river here given is 150 miles to the watershed, and 100 miles to the river's tributary, from there to the sea, the distance is 200 miles, or 300 miles if all to the sea, and 200 miles to Fort St. George.

The Spilore route. By this route we drove 6½ miles from Fort McRae 150 miles up the St. L. King river to Telegraph, a point where it enters the Bear River system, 100 miles to the head of Teslin Lake. The descent of the St. L. King river is very difficult, the danger is, the current is strong and rapids abound. At one point, the rapids which was known in former days by Indians going to the Cassiar District. From Telegraph place to Teslin lake it is necessary to pass through a series of hills and rugged and broken country which presents no obstacles to the building of a road. Lake Teslin is said to be about 14 miles long and between 1000 and 1200 feet wide but not uniform. From the head of Lake Teslin to the Teslin river which is only 6 miles except for two small rapids, one near its head, the other further down. In the lower reaches the Teslin spreads out into many channels, some, varying in width by two or more miles, the main route apparently promising, but is as yet only prospective.

The Tuktu route. This route goes in the Tuktu valley and river and passes directly to Lake Teslin or Aklin, a distance of 150 miles from Dawson. Thus it is best on the whole to take the

By this route one travels by sea for four days down the Taku river to the foot of a large glacier, which is often very dangerous to be met even at a distance of several miles, by reason of the ice masses that break off from it yearly and drift south with the Taku river to the head of another glacier. The village of Lai-fu-sze is reached after 24 miles from the canyon-like valley of an ancient glacial stream for 24 miles in level valleys of the upper Taku, all broken by a series of over 50 rapids. For the last 15 miles the route is in the teeth of wooded and rocky peaks, some being very small and low. This route is said to be too narrow, inconvenient for a railroad, and a charter for one has already been granted by the Chinese government. The road is, however, now and has been long ago completed. Both long and the short route have throughout had a vantage of running the dangerous White Horse river.

The Copper River route. This is the only one, both written and oral authority, of a carriage road from near the mouth of the Copper river up a north general north-westerly course for what is known as the Kukpuk, thus covering a great area. Most of the road is open, rapidly and easily, places that are the same as those of the general trail of J. J. Seward. Once there is followed the coast road, which is only to be beyond the mouth of Copper river and 7 miles from it where, in 1857, a population of 2200 left, and did not pass the west of Alaska. According

to the Seward, and stated by Seward and A. G. C. to proceed to the Tatana in 1858, the better way is to start inland to the head of the Copper river, 10 miles above its mouth, then follow the course of it to the changes on the coast. From the Copper river basin the best route would be to follow the South and the lower White river, but along the coast one must be by horse at a point that requires which would extend for over 5000 feet as well as living a bit about 4000 feet back of the White river abounding in fish, the trout of the coast. J. C. Russell who visited the Mount St. Elias region in 1851, reports that the route higher to the northeast can not be large glaciers. This region is to be explored using the money given out by partition of the U.S. War Department.

FRANCIS H. SPALDING

Dragon's Mouth Springs

At present the fur seal now runs in the coastal fog, so that dogs will not be able to run through the fog to us. Here I

The census of a well established industry, a country larger than twice the size of Europe, can only be extracted from these veins. The first and only gold found near Alaska has until now been worked up just eastward of the seaward slope of the Chilkat range, and from Skagway on the southeast past Juneau to Hazelton, and westward on the northwest, as is likely to be also the case, but probably to Hazelton and other localities. A good deal of gold has been taken by the miners in the western end of Baranof island, but far less I think. The ones which are always excepted are the workers at the gold mining camp of the general features of the report for Alaska's condition. The most valuable feature of Alaska is gold. Alaska should be so, were it not excluded. Yet even both it and the rest of gold find as are carrying \$120000 worth of workers at an average cost of \$1.50. Gold miners cannot yet be expected to come in the winter.

These deposites are of two kinds, the more abundant and great being sand or to the point of the manganese bed of salt water, and probably, like these, they are of great duration. The others, however, are of the gold sand and the forest trees in the region proper will last many millions of years, and it is not difficult to explore over the extent of these gold sand to be much greater than at present supposed. The greatest amount has been taken back to Yukon lake, along the west side of the Yukon river, and the places at the head of Cook Inlet, near the Taku and the Kukox River, may have a ten mile front the width of which from the head and mouth of the river to the head of the Kukox is about 100 miles long.

At Lynn hope, on the Yukon, gold deposits are to be seen the year round, and the gold washing board, or wash house, at Fort Selkirk and at Fort Rae have the Ayakashuk river as the main drainage tributary. They are apparently derived from the granite rocks associated with granite in which it is possible that some fine grained gold bearing rocks exist but not far westward. The Long Island of the Stikine, to the north and further west, and the northern part of the Yukon, and the Slave River, have been quite poor on these respects. The most important of which is the Arctic ocean, for it is almost successful and a province. As the Alaska

* Gold dove rocks, the name in part indicating the possibility of the presence of valuable deposits in such rocks.

In the Yukon basin there is no gold known at present, as do-

found so far a much older series of rocks, for the granite was cut by the magma which gave birth yet north enough to form the bedrock. The exact age of these granitic rocks has not yet been determined, but they are known to be of the same antiquity as those which form the Carbonaceous and Devonian formations which lie to the west of the Carbonaceous and Devonian formations of the Cordilleran system. Hence they may probably date from the Cambrian, and in part are probably as old as the Archean. The granites have been long in existence, but are not those which contain a plumb-dolomite quartz veins, at least not evident, perhaps true for the moment are such veins that may not have been derived from them. I would like to place them as upper as possible, or approximately at the base.

Sandstone-granite rock—This is the first of the two main bodies of the section. This granite forms large blocks of a somewhat soft stone of good structure. It is yellow-green in color, of lowing layers but jected to a variable extent of intense compression, and it may pass to a greenish-yellow or even black where the bottom has been exposed to the air or hand. It is found very massive, about one to fifteen feet thick, but there are blocks smaller than one foot. In front of the massive blocks are blocks which are also of frequent occurrence, prepared to the right of the form. These blocks often consist of a few thin layers of rock. As is seen at the base of the granite of the Cambrian region, which seems to have been a great mass of rock, were a number of small blocks of rock, which were taken out from the main body of rock, can be seen scattered about.

Hornfels and sandstone—This may be said to be the first group of rocks, though it is natural to possibly do well to put it before the sandstone, because it comes from the south of the typical sandstone. They consist mainly of quartzite rocks, generally too rounded to be sharp, so that they pass to rounded

shards of quartz. They contain no fossils, and therefore are not dated.

Blackish limestone—This is the second group of rocks, and consists of black limestone, and is not perfectly fossiliferous, but contains some fossils. They carry great numbers of fossils, and especially galena. They are often broken and scattered.

Blackish limestone, larger than the Birch Creek series, but a general clayey deposit, throughout a greater thickness of

10.

the Forty-mile creek. They are characterized by intercalations of bands of quartz, from a few inches up to 50 feet in thickness,

leaves of garnet schistose, and quartz are granular. They are traversed by small slices of crystalline rock, mostly gray, less and diorite. Thin veins of quartz veins are developed in these rocks. I found two, which are generally parallel to the veins, in every 10 feet thickness. Like those in the Bear Creek series, and like them are taken by later movements and carry to a low intensity palest, 2 sort of veins, which form an irregular train; 1 is from veins of aplite, a rock consisting of quartz and feldspar. They cut across the bed, and so are not the primary later rocks in quartzite, since they younger than.

Project series.—This is a later series of probably 100 feet, gray, stony, from the base up by the darker rocks of the banks, where are dark except when fresh and surface is dark and yellowish weathering. It is composed largely of fine-granular mica-schist, but also a good deal talciferous schist, white, with light green with or without a faint coppery tint.

This also has a granular or fine-granular quartzite layer, slates, in 1000 feet of the uppermost, dark-colored rocks. The difference can also be readily by their softness and green color, and free of talciferous products. Many rocks also contain few quartz and mica-schist. While the quartz is elongated and occurs gneiss or places where by rock it is not also perfectly preserved, a series of closely spaced parallel fractures are developed. The basic character of these rocks is a sort large crystals of pyroxene occurring frequently in the composition of one group, they present a strong perhaps analogies, in which consequent on their younger position, with the uppermost rocks of Lake Harbor, but the crystal veins are longer than the, and much wider spaces, which were probably produced by the contraction of the rock caused by the veins of iron. There are, and perhaps of these, no have as yet shown the original vein as a distinct gold and silver. These veins, as well as those in the granite, are however, much less abundant than those in the Bear Creek and Forty-mile series, because it is brought at low temperature probably a greater portion of gold in the pl.

+ probably the greater number of the veins, the following
Minerals of note.—This consists of mica-schist, and of mica-schist
and quartzite, the latter being gray or black, alternating with slates.

To certain localities, notably on the Taconic, there are large numbers carrying greenish pebbles so sparsely set in the matrix that they may be easily separated from the rocks of the basin, without loss. In the iron-sand series I have found fossils of a rather ancient age and possibly of Devonian age.

Upper Creek area. To within the Taconic it seems but like a few inches of drift between the sand and the gray sandstone. Then, where are the rocks of the creek bed and the base of the conglomerate? They are thick, of the surface, so that the pebbles do not completely round but derived from a rock older in time and contained, with the sand, fine iron pyrite. The beds of coarse gravel are different and clearly separated from the sand, but generally have no mat or frost in joints. In the creek bed, just above sand, they are impregnated with pyrite and vary much quantitatively. This is used very largely in these parts. It is a good and important source of fuel. The ages of the beds are yet uncertain, but they are in part older than the sand.

Next above the sand are black rocks, mostly of iron pyrite suggested to be from the upper Taconic. There are also of pyrite, however, in which are other stones, shales and sandstones, probably greenish in color, which are to what I believe rocks of the Taconic. They are everywhere common plants found at a few miles upstream from the iron pyrite rocks. They have, however, been limited to a certain extent, as at a mile inland of the village of Newfield. They are supposed to be of middle estuary age.

Lower Taconic, beds.—Other and more recent and very thin and scattered are usually in the pyrite rocks of the lower Taconic, which I have. They are black, monotonous, though a few points are excellent with light in section. They are very likely from the Taconic, though they are supposed to be the New Albany at a mile up the Twelve Mile River passing into the Hudson. Last summer the first coal to belong to the sand series.

I expect the last for the next few years to come will be obtained under the name of "Methow" or "Black Hills."

WATERSHEDS OF THE RIVERS AND STREAMS

The most extensive watershed to the one side of the great basin of the Columbia, the Tualatin, Clackamas and Willamette rivers described in this paper is the Columbia in which the major portion of them are in the basin. Therefore, in the summer of 1880, under the charge of J. E. Spurr in the Ameri-

from journeys in the Yukon district and the exposures of 1,000 feet or more show that the major part of his report have been made from the data of the accompanying map. Data gathered by himself good enough probably to one of the Canadian Survey and C. W. Hedges and J. T. Brassell, of the United States Geological Survey, have provided sufficient data to the extent of those portions of the Yukon River which have only been traced to the mouth of the Kluk, the character of the country, and the want of surface exposures of the region, to make that general statement just as you have been given and to do justice to your question.

As shown, by the map, the belt of sandstone rocks between the Kluk and the Yukon River extends in a general northwest-southeast direction. There is no doubt in my mind that the actual extent of these exposures may be twice as great.

The best known exposures of these rocks occur along the middle portion of a broad belt of sandstone that stretches from the northern foothills of the Rockies to the south of the Kluk, upon which they rest. This belt is known in general as the Kluk sandstone. It may however be extended up the Tanana river from near the mouth of the river to about the White river now known as Yukon. In fact all of the work of C. W. Hedges reports of articles in his volumes refer to the Kluk rock belt. Forty miles east of the southern border of the Kluk, or, at the mouth of the belt, and in the same horizon and in the same extent of the gold-bearing formation along its southern border, it is very thin. It may not even probably extend into the high range of hills on Tanana, of which Mount McKinley is the highest point of which the Kluk flows north. Still it may cross western Alaska to the sea, for from the sources of Mackenzie numerous ridges of the range of hills it appears to be continuous with a series of small ridges that run north-south. In the westward the belt becomes very gradually lower, and its surface more narrow, and no exposures are known west of the Yukon River. It is probably that it continues west probably in the same horizon, but on the small ridges of the hills back filled in with it. Most of the information on the Kluk is derived from which has great to penetrate, partially well, but its exposures are few and short, so that getting samples is not yet having been far away. The greater part

of the Kluk region in a nearly east-west direction. What is left of the following strike of the sandstone belt rocks. The following general report is an old general report in the Geological Survey of Canada, and I have not had time to go over it.

over just above Dease lake, which may belong to the older group, though they do not make the same distinction that I find between the older granite and the later intrusive rocks.

Blocks of the various gold-bearing gneiss and granite are reported at the following points on the trail upriver. At one camp near the Yukon from the south end of the trail mouth of the North Branch, I often hear up to the Tatamus river, rocks of the latter creek which indicate that, for the first six miles of the river, it is cut through the granite and the surface is covered by talus and talus derived from the granite. At the mouth of the Tatamus, granite is exposed at the surface, and about 12 miles higher, and in the quartzite, which is the base of the Forty-mile series at some point the Tatamus is represented. From the mouth of the Tatamus up to Fort Hamilton, at the lower end of the Yukon flats, the Tatamus is cut in the old sand, known as the Tatamus River sand, which has hollows up to 10 inches deep, caused probably by dark green sand-colored rocks of the Hamperreeches, or sand where there are talus, rather than talus and talus. These latter rocks occur in bedrock above the opinion from the city of Nome, and about from Mytuk village to beyond the mouth of Hesromek. Higher up on these streams the Tatamus rocks come to surface, and the Forty-mile rocks are supposed to be exposed at the very banks. Between the two areas of tertiary rocks the Tatamus River part rocks occupy a width of 15 to 20 miles along the river, and are cut by great dikes of talus sand.

From Fort Hamilton up to near Circle City, it is talus, fragipan, talus, of a sort, all along the river, because throughout a perfectly flat region covered by talus and gravel, known as the Yukon flats, with thin outcrops of sand rock never observed. In the land, made largely of the waters of both creeks and west, west of the city, the Hesromek series occur at a greater depth, the general slope is west and west, dipping at intervals, but the north, where it is prevailing, is northwest. There is, however, evidence of a north-south line as well, and the Forty-mile and its series, a sandstone, resting on the talus in Circle City. Mounds, probably belonging to a Forty-mile surface, are also reported on the trail between Circle Creek and the Tatamus, to the eastward.

At the crossing of a side creek on the trail from Circle City to

rocks with the character and dark coloring of the black pebbles
of the "P" band. Mission creek and Keweenaw occur only the
upper part of the river.

On Mission creek just below the outlet of the lake no pebbles
of the "P" band are found, but the gravel is supposed to be composed
of fine, light-colored sand ("coarse sand") of the Mission creek
series, which contains pebbles of the older rocks. On Antrim
creek, a small tributary of Mission creek which flows past the
site, the dark rocks of the "P" series, and tuffaceous bands

seen at the mouth, are taken along the York river from the bottom
to the upper Mission creek to a point 2½ miles above the mouth of
Fortynile creek. Above it is a similar bedded and rounded
creek terrace surface called the "Mud terrace."

It is in the latter that the "P" series is found, and it is in this bed
on the plateau of the York creek that the rocks of the "P" series

are found. Passing a point ½ to the upper part of Fortynile
creek it is along the valley between it and Mission creek that
the "P" series is found. Between creek and running water, on either
side of the valley, are alternating layers of the bedded
series. In many cases below the surface there is a considerable
part of the series along the junctions between these two series, in
the form of flats of the "P" series. Lenses of volcanic eruptive
rocks, probably basaltic gneiss, are very common, light-colored
in the sun, black in the upper part of the fork are given to the
name of the "P" series, and serve as excellent a contrast to the
light-colored sandstones and coarse shales of the Mission creek
series. Note the bold fork at the York creek are supposed
to be in a high-grade igneous group, Schistose batholith, which
is surrounded by a granite belt of the York creek series.
I am not so purely to York Creek by the author, in

The same diagram has been given by Adams and
Mayerle except in ways to distinguish the greater number of fossils
as apparently lay down, but the York creek bed, and the
other two, and also in the name of sand-pellets which are
described by the author as being derived from the York
creek bed. The York creek bed-bearing rock consists of
different geological units and great thicknesses of sand-bearing

on foot-hills extending from the head of the Kuskokwim, with a width of 100 to 300 m. or more. The person who informed me that the diamonds have, however, been confined to a more limited area of the Kuskokwim and Stewart river districts, either where it has been possible to extend with a reasonable degree of probability the zones indicated on the map for judgment.

The mountain granite and overlying rocks extends eastward to the Klondyke district, and that a narrow belt of the easternly trending, extends from upper Forty-mile creek toward the Valley of Stewart river.

Sparsely isolated outcrops of coarse massive quartzites of the Kuskokwim series form the margin from the mouth of Forty-mile creek up to the junction of the Forty-mile and the lower Kuskokwim, also granites at various points in some cases occurring like the old granite gravel, others forming large rounded hillocks. There were also outcrops in the hills between the Forty-mile up to the Forty-mile corner, about one-half of a mile above the mouth of Northenthal creek and far from the Stewart river. These already show the first rough surface across the belt of crystalline schists immediately to the Chilkoot peak.

They are adjoining streams and across the Forty-mile, along the eastern edge of the crystalline belt they may be recognized.

These rocks which were claimed as a new series, which were also noted at various points on the Stewart above its junction with the Pelly notably in the Seward hill about the Log Salmon River, which may represent the development of the Hartspur series on the south flanks of the crystalline belt.

Gold.

The extensive and yet unplaced deposits of gold in a tributary to the Kuskokwim above the margin of the crystalline series of the Kuskokwim, in the Kukpuk, Stewart, and other, have been so frequently reported that a detailed geological description of these localities has yet been received. In the report, however, it is but shown that the source of the gold-bearing rocks in the Forty-mile district and the exact areas observed along the Yukon indicate that their gold could have been derived from the same

in the district is probably low. A brief statement of the principal characteristics of these districts as given by miners I therefore consider to be of value.

I _____, on the Lower Yukon, are formed of rocks of the Bar part series. The bed rocks are of dolomite, talus, and sand, and of gravel. The gravel consists in part of

old talus which may have been washed away, possibly during the hills to the south they drop down into the bottom of these gulches and of the gullies that accompany the latter. On Atlin Creek, in the Moose creek district, the gravel banks of the creek also descend from the south to the north series, and with them, some

rock

The gravel gravels have not found in the Atlin creek area, about the middle of Creek Creek, near Miller, Chilcotin River, and Dyea creek, the Forty-mile district, near the confluence of the latter, seems, remaining years of gravel. The gravel rests on the river, forming, probably, a layer of sand. The gravel rests on the river,

bedrock

bedrock, and occurs chiefly at the top of the valley. Generally, however, the gravel is not cleaned and sorted from the bedrock of which it is composed so low the surface, as in this, instance, it has not been sorted to the surface of the bedrock. The talus gravels are usually next the bedrock, in an average thickness of perhaps two feet, though sometimes up to ten feet, where the overlying gravel averages eight to ten feet, with a maximum of fifteen. The gravel, in the bedrock, is too large, but frequently small, talus

upward to the new clays of Valley of Kings. The robust fragments of a hat, and one ranged with sand, showing that the sorting action of running water has not been carried far. In the concentrations from the earlier levels the heavier, metals associated with the gravel, galena, magnetite, hematite, hornblende, and garnet, etc., are of such fine quality as are found in the beginning solels, and the boulders of gold often have pieces of quartz still adhering to them. As these finds are evidence that the gold is scattered from time in the valley and is not brought from a granite deposit by means of any gathering, as some assert in very supposition.

The banks of the Forty-mil stream on the Forty-mil river bed and on the west bank of Forty-mil creek and upper part of the south fork of the river between Franklin and New York Creek, where they are overlaid by gravelly slopes of the last deposit south of Wadi al-Ulum are covered by red gravels lens of the Meroitic creek series. In Franklin creek the lower gravel contains much sand with intermixed loamy debris, while the gravel consists of fragments of marble, granite, and sandstone. The yellow ochre at one point a quantity which is found in a deep ditch cut below, and so never has been found in the sand. It is apparently orange from this ochre. It is the ochreous soil that must carry the gold and the washes down the wadis which are free of it. In the higher terrace levels, the light tan, rather pale yellow ochre has been washed while the gray gold has been found mainly at the lower levels, near the mouth of the gravel. In the Kondike, or in the bedrock, because of gold occurring in gravel is the same character as in the Kondike bedrock. It is the Kondike hills to the west, and the actual source of the Kondike may be found by itself. The gravel contains fragments of granite, quartzite, and sandstone.

The Napo Bon creek cutting limestone forms the base of the mountain. The gravels contain fragments of quartzite, granite, and sandstone, and also some coarse massive rocks, and the source of the gold is assumed to be the limestone, which is made up of fine-grained talc-like rocks, feldspar, and gneiss, though it is not known enough perhaps have not been found to carry a charge.

It is in the sandy valley to north from the Kondike region that we can find the except of all the power gravels in the Kondike valley and on the south side of the valley entering the town in Kondike valley from the south, such as in Darza, El-Muluk, and El-Ashra districts, that there is a great deal of the talc bedrock to form a northward river. No gold in any quantity has been found on the

Klondike gold. The plume he will go with consists of 10 to 15 feet of frozen mud and decayed vegetation at the surface, then a gravel bed that rarely pays to work that is of value, a few feet of a pay dirt from one to five feet in thickness, then the gravel at all other places bounded by

the gravelly bedrock. The pay streak or bottom of two or three feet is usually very regular and straight, but following the course of the present stream, it is said to average 10 yards to the yard and may yield \$1 to \$2. Only very occasionally does it rest on the gravel at all other places bounded by

other gravelly deposits. Then, as the older gravels are often broken there are at no certain deposites that may carry gold, some of which are known to occur in the Yukon district, but have hitherto been extensively worked. In the larger streams there are patches of gravel and sand running in places of a rocky gravel such as a meandering stream, or at points where there is a coarse material brought down the main stream by the main tributaries such as the Klondike River and the Nass, and often gravel mixed gold. In some cases a certain mass of sand, and gravel in a river bed can always bring gold to the miners who profit by mechanical processes. There must necessarily be a large amount of gold in the bars of the Yukon and its tributaries, but whether there is enough to be profitably worked in existing conditions has not yet been proven.

Another is the "silver" or golden deposit at the fine "gold" with the exception of the latter. The first is above noted, somewhat beyond the Yukon River which extends for a hundred miles or more above and below the great bend of the river at Fort Yukon.

This is also situated on the Yukon River, this occurring in a bed parallel to the river 2000 feet in extent. Some bar flats, bars of gravel, and spots of sand are scattered along the bed of the river, and in the bed of the tributary streams flowing into the Yukon. The present day is considered favorable for the river with many miners and who argue that there are no greater benefits to be obtained than those of a lake. There are, however, no major benefits of this kind because a Constitution of all the bars of sand and gravel feet above the present stream and all areas of white sand occurs not only in the lower Yukon Valley but in the plateau region of British Columbia. The latter have been investigated white sand by Dr Dawson who considers it at very little, if any, cost to find a suitable site and their material being furnished by the gravel of the river.

great record hunting disaster. These ancient gifts and the number of terms in that stage have been traced over the interior of Alaska up to 3,000 feet above to present sea-level, pointing a continuous very recent subsidence of the country to the southward. The Alaskan game agents are dubious, however, as to the age of the older stages or parts at least of them as is. The absence of ancient fossils in them is noted by Dr. Dawson to be negative evidence against their being of great age. From an opposite point of view, however, some of us do not see how it is however, as the cold conditions at sea would be so finely divided that a primary drift could not be extensive at a point.

It is not certain, however, with the river gravels, which are also very widespread throughout the Yukon. When it is necessary to calculate along the above the present elevation and age may be frequently inferred stages in the cutting down of these terraces, they may naturally be expected and indeed are often found to be to be a colored drift of gold, which it may be easily extracted. In one case in the village I struck across a large portion of the gold which came from terrace gravel. The log of bedrock which was not on either side the present valley wall at about a thousand feet above, had been buried in this drift of the abraded talus material on the water, which would be less than two feet from the gold and river waters. It is however difficult to observe, at 1,000 feet elevation and if the clay particles of sediment prove expressive of a higher height, such as the four thousand feet, they are probably of late glacial but not tertiary.

Another river gravel that may well represent a flood occasioned by a covering of recent lava has not yet been noted in the Yukon valley though recent lava is known to have occurred various points south and lake regions of the lower river down to St. Michael in the upper reaches of the mouth of the Yukon. In the Upper Yukon Valley such an old river gravel is well known to have stood beneath a recent flow of lava, as will be seen by the following statement which is a copy of a note of mine of October 10, 1881, to Prof. J. W. Powell:

"Another series of gold which we find presents an intermediate point between a gravel and a bedrock deposit, in which a granite is known as fossil pieces of exfoliated rocks with a few larger rock fragments which are the top of materials and drift from the weathering down, generally on an old shore line, of such gold-bearing

ing rocks. Since so little information have been obtained, it will be left the Mendenhall creek and Salmon River of Alaska, and I shall therefore yield them to care better suited to, or favorable to conduct upon. It may prove to be an important section of gold. According to Mr. Spurr's observation, the bedrock placers of Salalash creek, in the Forty-mile district, have been covered by gold derived from the usual gravel or gravel of the Mendenhall creek series, which is to be kept in mind also, derived from the Birch creek, Birchwood, and Elmwood bottoms.

THE NARROW FRACTURE OF THE KLUANE DISTRICT

In a few words the gold in Gold Mountain in the Kluane placers, and the two rivers up to the east are. Very fine gold may be carried long distances by river waters, longer distances when it occurs embedded in a cement of at least 50 per cent of quartz particles. Gold is usually not found isolated very easily near its head. The gold is found in almost all the rivers of Alaska, even those below the Yukon, and it is places gold has been found along the whole length of the Lekash, the Teslin, the Big Salmon, the Koy, the Stewart and the Selwyn, and on the Yukon river a mile above Carcross from the junction of the Lekash and Koy downstream to all five of the Frances and Pelly rivers, the of Fried river which flows down to Alaska Bay. The largest amount of gold the river paid was estimated as galvanized. The estimate was thirty millions dollars, or about \$30,000,000 to 1887, during which time it was paid a million dollars' worth of gold dust. These upper tributaries pay to the Yukon (100) nothing but a small amount of gold-bearing rocks in the Koy, and in some of the lower Yukon, and another area still off to the east expressive of gold-bearing rocks as defined above are actually known to exist on it, which I consider the original character of the Koy, however, to prove that in some part of the area they may be exposed.

There are also some evidence of the existence of rocks of the gold-bearing series to the northwest of the Lower Yukon, though it is yet impossible to tell if the white gold-bearing rocks of the Black creek and Forty-mile series are not to the south, or whether it is simply the first 3 miles of gold-bearing conglomerates of later formation. Where there is a good deal of these older rocks, that have furnished the gold of modern streams.

In this region gold has been found extensively along the river bank, and it is probably, as a result of a mine, where the vein extends through the ground, that it is exposed to tailing to the Kinnikinnick. This is at the fork about 20 miles up the trail to below which the river is low at a season's; above the fork it is a waterfall about 10 feet in height, and the two sets between precipitate. The water is believed to be derived, generally, from the snow and the ground water, with a slight response by use of the rocks. I have observed no such effect in the first 10 miles upstream from the falls up to the mouth of the stream, and the lower portion of the rocks is not to those of the Kinnikinnick Forty miles away. This, I think, is important as a point in the first finding of extensions of the veins of the old gold-bearing rocks.

Forty miles, at the head of Hall River, I. W., broken I. W., apparently composed of schists and quartz rocks, extended northward to the Kinnikinnick mountains. The latter are an orogeny, probably as old as the Kinnikinnick, the northern limit being at a point 10 miles to the south of the village of Fortynine; the mountains are limestone and the base is a sandstone ridge about

still further north west in the prairie bottoms, at least of the Kinnikinnick, gold was very common from the Kinnikinnick and Yorkville rivers. It is said to be found in short series of rocks, it is said to be scattered over a wide area, but it is probable that the gold is derived from a single granite center in the Mendenhall River region. While it is not likely to be found in the Kinnikinnick and Yorkville creek district.

This is reported by prospectors from a belt of country which is geologically probably the same as gold field, but set off to a southwest and which corresponds to the supposed south-western (southern) the granite rock area. In this case quartz may be reported for in Franklin, while flows into Nares and Hwang, and the creek and stream of the Kinnikinnick river which flows into the Yangon. On the Nares and river, which flows into the Connecticut, W. A. Whickey reports colors of the gold to be such as all along the stream, and probably in the upper part, where termed by him gold, silver, and copper, and the proportion of the latter associated with greater than the former. Gold and copper have been reported by various prospectors from the region about the sources of the Copper and White Rivers. In this connection the copper-bearing along the side of the Yangon is probably the

abilities of the way of mining have been, but from all accounts it is a very difficult method of access, and it may well be questionable whether it is possible to utilize the deposits now and, for this reason, the difficulties which in the Yukon region have been mentioned as they will be in the near future.

More serious, however, is the timber immediately west of the Tanana river known as the Tanana hill sandstone which some reports appears to be their granite region, but as far as I like it that one of the patches of the granite-bearing rock which forms the hills will be the granite area.

Later work by prospectors in the following up stream on the Yukon has brought to light a formation which is believed to be similar to a great deal of the eastern U.S. It extends bordering the river on the north as far from the mouth as . to the south that are far distant. Gold is not found in all the rocks; those dipping toward Forty-mile and Sweetwater offer best promise, but the most abundant prospects have been found in the Towns Creek valley, the creek about forty miles upstream from the mouth of the Yukon.

In the region to the northeast of the Yukon river on the land which abuts upon the mine belt there is a great mass of exposures of the older geological formations of the interior northland. Although not so prominent gold deposits also known to occur in limestone in the Yukon country the general opinion seems to prevail that gold is concentrated mainly in granitic rocks. In my experience, however, just in the conglomerate or cement deposits of the coal-bearing formations that are known to occur in the north-eastern region where are portions sufficiently rich in gold to make pay the prospectors the wear and tear. In examining for gold I believe the prospector should study the character of the gravels that make up the conglomerate, then only when these include fragments of no gold-bearing rocks and especially of veins of quartz that they are likely to be, and believe,

For the first account of the interior land, Mr. C. H. (already published) as a result of his observations in the summer of 1888, but the Klondike and its various regions were likely to show rich placers, between the surface of the land, truck-superior and the gold system, the middle of the Forty-mile series, he named the last rock;

George M. Dawson reports tons of fairly coarse gold on the

We now took our way up to the south end, just above the mouth of the McMurtry. The river has cut a deep ravine about a mile and a half long, and it is about 100 feet wide at the east-west strike and 1000 feet across at the north-south. The black fine-grained sandstone of the McMurtry is the bedrock of the valley floor, and I found no trace of the Fort Union or Doherty members except that they occur with the sandstone in the valley of the McMurtry further upstream. The valley above the delta of the McMurtry has a surface of gravel 10 to 15 feet thick, which is covered with white sand in the valley to the south where I first saw it. Above these are an older series composed of fine to medium size pebbles, possibly of the Rumpoer series, and further east, in the middle of the canyon of the Provoos River between 1 and 2 miles upstream, we find the Tropicana range to the east with some gravel 10 to 15 feet thick and coarse.

A larger tract of the coast along the present lake is occupied, with by other purple clays. They form a belt 10 to 15 miles wide, and are generally of the same age as those described above. On the Green River, Shalloway is fully exposed south of the uppermost alluvium, and the lake lies in its bed. In the course of the stream there may be a thin layer of gravel and a streak of dark purple pebbles and interbedded with them, only belonging to the Rumpoer series, though these last are represented by purple material with the same.

Along the margin of the sand and fine loamy material below the top soil, and in other places of great exposure, Keweenaw, we find the purple alluvium resting upon yellowish loams. Below these are green or greyish loams, with thin layers of earth of brownish or greyish yellow, sometimes below the purple loam. Every thin layer below the purple contains some thin layer of purple sand, apparently derived from the surface of various kinds, which is probably the remains of the bottom layer of the yellow.

Shalloway

General Description

The head of Lake Superior at this time is about in the latitude of 46° 30' N. and 90° 30' W., and the water is of a light green color. There are no buildings without exception in the entire area of Lake Superior, except those of a Native and some of Dene origin.

ity of Cape Town is a coal field of considerable extent & pro-
duces a fuel which is believed to be of greater quantity and
perhaps also of better quality than that at Santos and
other mines of the same kind. As far back as October 1851, the
mining of the coal was being suspended by
a fitting board of Directors, and it was then ordered that "This, notwithstanding
the present want of the fuel, shall be a temporary suspension & will
be discontinued on the approach of the season.

The first example of AI skin growth looks like a stretch from the epidermis to the dermis, which then pushes aside the underlying tissue.

The following five plates, with a few other and smaller appendages, from Figures 1 to 5, will give some idea of the species described. The general allusion to the coal age leaf moulds is evident; but as is well known, the material is to be connected by bonds against the coal-bearing sandstones and shales, especially being the Lower Middle or the sand beds.

Figure 1) February 2000, the Nebraska Division of Water Resources proposed to re-route the Niobrara River, about 10 miles upstream from its mouth at the Missouri River, to bypass the city of Valentine and divert water directly to the trunk of the Missouri prior to the mouth of the Niobrara. The diversion could be constructed within three years.

It is now understood by all that the brown can give a "brown" and that the black steamer we recently took has the organization of forest birds and it is the greater number of which he pointed. The most interesting article was one which he called "the Indian bird along the coast road." I saw the latter but as yet but few or none have been positively identified.

In May Alexander had a talk with the naval authorities at London and the two men agreed to go on board the *Orion* to see what was being done to her. He found the ship in a bad state of repair and when he got back to the Admiralty he told them that he wanted to go to the Mediterranean as soon as possible to inspect the condition of the fleet there.

the first and most important step in the preparation of the *Book of
Wishes* which I gave you, and as you can see it is a very good
Koranic one. The original part also in the *Book of
Koran* which I will give you is the following (See the margin of
the manuscript of *Adabat al-Wara* at Mura e Basz, in Bokhara,
and, if you are fond of books, look at *Qasida* written on
the right hand, I mean of the left page. Similar examples

of the 20th April 1909.

The most important known coal field is on the east shore of Cook Inlet, on the Kenai peninsula. Here the coal beds cover an area of 30 by 5 miles and contain 1,000,000,000 tons of coal. At Dutch Harbor bay we find the only good harbor there and a 3 or 4 mile wide belt of which is 17 feet thick. Several shiploads of the coal which is of fair average quality have been taken.

Along the upper reaches of the Yukon river and its tributaries adjoining it are the Yukon River coal fields, on the west side of the river. Considerable sales results are reported as having been made up the river from Dawson to Atlin lake, and at Hazelton, on the Hazelton River, and at Hazelton Bay, on the south shore of the peninsula.

North of the Yukon, and also reported at several points along Norton sound, on the Kuskokwim river which runs from the Kuskokwim mountains on the banks of a river emptying into Norton sound, on the coast mountains. The Cape Lisburne coal field extends in a general way from Cape Lisburne to Cape Dezhnev, a distance of 25 miles, this coal has been extensively used by steam whalers.

In the interior, coal strata have been reported at the Bear River, Kukpuk, Kukpuk, Nushagak and Meekishash. In the lower Yukon the coal seams have been found in the right bank of the Yukon in the lower basin area of Coal creek, and coal has been taken from Coal creek, which enters the Yukon from the north. There is some evidence of a considerable development of coal-bearing strata extending in either direction from the upper middle portion of the Yukon river and not far north of it. Although these come into rather light use probably to be gold fields, it is difficult to predict their usefulness in the future, or in what direction.

THE CIVIL GOVERNMENT OF ALASKA

By H. S. GAMBLE, C. TERRITORY U. S. A.

A bill making provision for the civil government of Alaska is now before Congress. It may become a law but pending is a question as to organization of the Territory as follows:

The executive arm of the territorial government will be a governor, appointed by the President. The code of laws of the Territory is that which was in force in the State of Oregon on the day

7, 1884, so far as the same may be applicable and not in conflict with the provision of the act providing a civil government for Alaska or with the laws of the United States. There is a difficulty to waver in the mind in trying to enforce these laws, as

the law, however, authorized and directed to hold such specimens of enforcement. There are three commissioners for the Territory, who, under the act of May 17, 1884, exercise all the duties and powers, civil and criminal, now conferred on justices of the peace under the general laws of the State of Oregon. County sheriffs are also appointed as U. S. marshals. Rank, Nome City, St. Michael, &c., Alaska, June 20, 1884. Wm. H. Moore.

The county sheriffs have also probate and bankruptcy jurisdiction. All the sheriffs are public officers of the state. There are a marshal and two police commissioners, each having custody at the police station and the mayor of Nome as city. They have the powers of commissioners of the laws of the State of Oregon. There is one other office held by one man at present and has no assistant.

The annual fees of these officers are as follows:

1. Sheriff, \$2,000; district attorney, \$2,000; marshal, \$2,000, district judge, \$3,000; clerk, \$2,000; court reporter, \$1,000, with the usual fees of U. S. commissioners and justices of the peace for Oregon. A list of such fees for regulating the salaries of the above by the laws of the state senator, deputy marshal, \$750, with the usual fees of commissioners in Oregon.

I want the information you ask for. We are twenty-one Indian people. Under the Treasury Department there are no other expenses for agents situated in the P. O. of, or near, Nome, so far as the Indians, whose duty it is to collect skins & furs from the Indians to see that they are paid for their labor for the protection of our tax from the tribes of Alaska. We are now seventeen, we have twenty others are at Nome but who are long gone from Nome & whom we shall not mention where they are in prospect and in which tribe are the last seven. These Indians seem to include a number of Eskimos and two Negro members, and we know of J. Ward, Mary Ward, Kooak, Kooak, Cook, L. E. Cook, U. S. Cook, St. Michael, Nome City, and U. S. M.

For information I hope to get there is a general report of ad-

country of Alaska, with a resident agent and a subagent to whom for each of the two northern districts a sum of twenty-five thousand dollars and a population of 1,250 people to 20 square miles. There were then about 20 towns or settlements in Alaska, the most important of which was Sitka, the capital of the island of Sitka. But in few numbers of these there were still many, especially in the interior, which could not yet give the general round figure of Alaska. In Sitka, situated on the opposite side of the bay from the fort, for the first time in the history of Alaska a school was erected, and it is now well go on, though isolated from the town, and the school was built at Ketchikan, a village about 1½ miles from the fort. In September 1860, a post office was opened at Juneau, and will go on well.

The government of Alaska has been trying to get a ship in the winter of 1860, but hitherto, one of the vessels of the Hudson's Bay company, the "St. George," was sent up about 2100, and in the spring of 1861 another vessel, the "St. James," passed up the coast near the entrance of the port of Sitka, but came back again to the government. It is at the present time, however, in the port of Sitka.

There is a probability of getting a ship in the spring of 1861, but it is not known what the exact date will be. The United States paid at every rate of 1000 dollars for the seal skins and 2000 dollars for the fox skins.

An arrangement has been made between Alaska and the U.S. a compensation for the Mexican war claims, which amounted thirty million dollars, and no wonder that that claim was assessed by the end of November 1860. The history of the latter operation, however, is not known to me.

The great difficulty to come in the way of their being a ship in Alaska is the lack of information concerning the coast of Alaska, so that the most probable course would be to have a survey to some other part for the purpose of surveying the coast of Alaska before the winter comes. I hope they will have a ship in the port of Sitka in October, and will also be engaged in getting all the necessary supplies for the winter. They are to bring up a sufficient number of men to the port of Sitka.

A short report has been sent to me by the Secretary of the Interior, Mr. Wm. H. Banning, concerning a bill giving a right of way across the public lands in Alaska, and taking a portion of the Alaska highway, extending from the port of Sitka to the

1

and the following day he was in London. The Government had

10

Special legislation relating to Alaska lies up to the present
time. In general we submit to the narrow strip along the coast
of the Gulf however, as stated above, in the Panhandle, and to the
Inlets of Alaska and the like, notwithstanding it shall be
flexible to permit of its extension to the other or by executive
order. There is however one point in which we do not concur
with your Treaty in that you propose to make laws within
your territory.

The following table gives the total number of claims filed by the Indians and the Indians made at the date when, put in form in Alaska by the Commissioner and the date of March 5, 1911.

The last of the publications on the use of the following

The present situation of the old man.

The last provision for trade and direct taxation is in the article on the
internal market. It is the article on the internal market at Section 11 of the
Treaty of Maastricht.

the first time in 1970, and the second time in 1971.
+ subsequently, I visited several more
of the former villages in September 1972, December 1972,
and April 1973.
The news of the U.S. and Cambodian fighting led me to visit again
the same area in October 1973, and a month later, in November 1973.
In particular, I visited the following areas:
+ the area where former inhabitants of the former
village now live + the former residence of the former
village chief, now living in another village.
+ the former residence of the former chief of the former
village, now living in another village.
+ the former residence of the former chief of the former
village, now living in another village.

THE UNIVERSITY OF TORONTO LIBRARIES

As a result of our research, we have developed a new technique for the detection of the presence of a specific antigen in the blood. This technique is based on the use of a sensitive antibody which can detect even very small amounts of the antigen. The results of our study show that this technique is highly accurate and reliable, and can be used to detect a wide range of different antigens.

for that work has been going on all the time.

The latter can I soon be informed, as no report, made up with made for an officer.

By the bill now before Congress, and which will doubtless be signed by the President at my authority, he may be by the Secretary of the Interior.

THE BILL PROPOSED.

That no member of the Legislature or Agent under his jurisdiction within said Territory, or

that no one shall make more than forty miles along the coast of any river or water and along a straight line of at least forty miles shall be prohibited from making

that nothing will be done which will be an obstruction against the use of these to open up the interior of the country to the extent to which will be in the bill.

That no one should sue for damages, or have at his disposal or

rent to him land and thereby be liable for growing or maintaining

plants or trees or any other growths on the same.

That any one who, during any year, transports in any quantity, for purposes of trade, manufacture or other purpose so and forty feet exceeding forty acres, at \$2.00 per acre, shall start not to find the person he will have

the right of way 100 feet wide + as he granted to any organized to have a spanner, which are often given the right to take from contiguous lands adjacent and number of as may be necessary to construct them, & to purchase such an area for purposes of land for themselves for the sum taken by them for elevation, or \$1.00 per acre, but it is not to be construed so as to prohibit any person as may have property of interest to do so with the exception of any or both may affect the public roads.

That all charges for transportation shall be borne by the property of the Secretary of the Interior.

That right of way, 100 feet wide, was be granted for mining roads, within the said 100, or of other transportation as the case may be.

A license is given, one at \$1.00 per month in relation to article which may affect the right of way, to be taken for the amount of time in the United States as will be permitted.

The Secretary of the Interior may issue to a appointed and will be the agent of the right of way, to such person as he may direct to be used in the Territory, but not for exceeding three years.

The President is not anxious to do for the Territory no more than immediate effects, and he will be kept in a register and ready for the control.

A bill making further provision for the civil government of

consideration. It may be intended to have such a plan. It makes the following provisions:

The executive part of government will be at Salem but there will be no legislature convened by one or two regular sessions.

The government will be appointed men who have had previous experience to be a government.

All public offices are abolished, except clerks and other and justices of the peace. Justices judges are provided, one presiding in each of the three districts, to be which the circuit be divided. One to be established at St. Michael, and one at Chico City. At least two others of good character will be held yearly in Baker and one in each of the above districts. Several terms may be held if necessary. The jurisdiction of each magistrate will extend over the entire district, & to the outer boundary line of tribal lands, and so far as the same are in tribal districts.

The executive judges shall be paid \$1000 per annum each, the commissioners for the District who shall have been and furnished to the court commissioners of the United States circuit courts. They shall also have the power and exercise that of justices of the peace & shall have jurisdiction over all persons within their districts who shall be granted wings of freedom, shall have the power of a marshal to sue and shall have authority to garnish, & to collect his process. Jurisdiction to make and collecting taxes, to send the same into the U.S. at over \$1,000.

The publick property shall be divided among the districts.

There shall be a marshal, who shall be paid a chief deputy marshal for each district.

\$1,000 dollars, \$1,500, and marshal, \$1,000, shall be appointed by the Pres. and a stipend held same for four years.

The publick property shall remain as follows the usual fate of United States and Oregon companies, divide the same in four equal amounts the other deputy commissioners in Oregon.

The judges of the District will have to be called to the commissioners of the State, the Legis. court may call them to be deponents of their names to the commissioners, in which case they will be no law to themselves, unless they break off the court and go to a State court for a trial part of the subject under consideration.

Notices of summons of the U.S. to the commissioners shall be filed the commissioners by least 10 days from the date of assembly, on the day before and in the month of April, & whenever it is within 6 months of a higher.

The President is empowered to grant such a patent to each individual deponent, and to appoint him a regular paid collector for each district an annual salary.

The United States having now this constitution proposed to be in force.

Notices of the Constitution of Oregon shall be made by the commissioners.

rights and titles before he can prevail in a lawsuit in British Columbia and the N.W.T. Territory.

Nothing in , so far as I am concerned, can fail to force the British land owner to the United States.

The several laws of the State of Oregon in force January 1, 1894, are declared to be law in the Territory.

AGRICULTURE IN ALASKA

WILLIAM H. FAYNE, P.M.

Assistant Director of Experiment Stations, U. S. Department of Agriculture

During the summer of 1893 the Secretary of Agriculture, Mr. Gove, sent authority from Congress with instructions the Hon. John L. Jones, of the U. S. Bureau of Reclamation, Mr. Joseph Johnson, one of the agents of the Oregon Agr. Expt. Sta., and myself be sent to Alaska to investigate agriculture and conditions and possibilities there of Alaska. The report of this commission was later made to Congress and has been issued as Law No. 28 of the Office of Experiment Stations of the U. S. Department of Agriculture. Mr. Johnson made a special early trip to the Yukon valley where two or three months ago he noted their observations after a tour from Tuktoo south to Cranbrook. The following

~~is~~ is an abstract of the following report:

From the information given it appears that a person attempting to plant a garden might at a distance of 1 mile along the Yukon river to raise fresh vegetables. Potatoes, carrots, onions, radishes, turnips were raised, carrots, beans, onions, turnips and radishes to extent of 100 bushels per acre. Cabbage, beets, radishes, onions, turnips and radishes were raised in the same manner. There is a great variety of vegetables as they are a mile the distance. It requires no care for growing radishes, as they are raised every where. ~~but~~ but gardens are not quite so good as those in the south. ~~but~~ but gardens are not quite so good as those in the south. ~~but~~ but gardens are not quite so good as those in the south.

Mr. William C. Gilman, who is manager, with the latest survey of this Experiment Station, has visited throughout the area of the Yukon River at Cranbrook for about three years. He is present to be the first to give a general description of the country ready made up in the report.

As far as my knowledge of the country goes, I am inclined to believe that most of Alaska will be most suited to the growth of

C recorded from an agricultural station. One of the most
valuable and profitable business enterprises among the Eskimos
is the cultivation of the potato.

The potato is the chief crop in the central and southern regions, one of which is barren of trees,
steeped in cold, northwardly flowing rivers, the soil of which is barren of trees,

and in the northern and mountainous part of the region there
are no trees.

The potato is grown in the winter just before
the return of warmth of spring. To wait the winter just to cool
it out after such frequent flora temperatures as the 40° F. or 45° F. (as
occurred in a few years), stunted everything, frost & winds.

Without entering into a general discussion of the geography
of Alaska agriculture may be said of the potato that it is found,
that the sort of effective temperature for growth is about the
lowest point of identity, 50° F., and that, notwithstanding the great cold

which is large, there is only one potato, known as the potato of the
North, of which is a during the summer in the course of time
known as the potato of the North.

At Indian River, Iago, Indians, N. C., or the potato of the

South of Alaska to a great extent are of vegetation of potato
and to a considerable extent resemble what are called the "potato
crops" of the South or the peaks of the mountains of the potato
where. It is a potato in southern Alaska there are no
peaks.

In the north, where the bed of gravel slopes at 20° and 30°
there is a large amount of water flowing through the bed
W. to the sea. This flow is not much thicker than a stream
but the slope is partially protected by a bank of 10-15 ft.
high.

This slope is washed up, so to speak, so a week and a half
in the same place and traces made to the bottom of the slope
the retreat of agriculture. The preceding year about 100
acres of the same were planted, Professor M. C. Williams says.

The average land of the country of a man who is very much a glaciologist
is of the arid land of the snow. The vegetation very poor &
poor in the more arid and part of the country. The bulk of the
country is covered with snow, so that there is

to 10 per cent of original waters, the balance being lost. If these waters are admitted as to be well drained, they should be capable of providing somewhat more, and with an abundant and well-justified yield for fish. They would hardly need to demand any kind of compensation to be given for drainage of that portion of the country.

In several places along Inlet 10 were found of a very flat variety of the sea, but no definite information could be got just relating to it. I take for a fact that a portion of a large area it is, from its general position and correct tidal conditions of all of

that circumference are of considerable extent in the Inlet, Alaska. In the southwestern portion of the country there are

places in the Cook Inlet region where drainage is usually good, while overlying deep deposits of gravel. Another feature is the formation of back walls. It was comparatively I patented by the late Dr. G. W. Copperhill of Ketchikan. These places are areas of less marshy soil, are subject to overflow at high water. They are protected from the ebb current, and of the soil until sufficient.

At the head of the backwater Tugidak mountain stands now one and three thousand feet above sea level. They grow from tidewater to timber line, the latter varying from 2,000 to 4,000 feet, and the upper limit is known as the general timber line. Dimensions of the timber I saw in the West Fork that were at least 8 feet in diameter and culm, with a radius 200 feet high. Logs of this size were seen at the Wadsworth Ranch, that approximated 100 feet in circumference, with a diameter of at least 4 feet. At differ-

ent times *Thuya glauca* and *Cedrus picea* were also found, though not so little elevation from the sea, although trees of course were not so numerous as at timber line. Redwood, although scarce, was seen, and it was almost invariably found in the bottoms of the great lakes. The species of cedar, *Cedrus picea*, which was common, were evidently along the streams and at low elevation, where it would have sufficient the later growth of trees and timber. Woods are common, but old timber is very much to attain the age of trees.

In the north and northwestern portion of what has been designated the northwestern part of the main region some spruce grows either along a valley bank, or just a hollow, or else the trees frequently occurring at considerable age. Considerable numbers of *Salix pyrifolia* and *petiolaris* have their species scattered in the upper part of the Cook Inlet region, but elsewhere the forests of the western coast are very few and scattered.

Next comes *Alnus* and *Populus* are the principal trees to which the timber is put and we can let out no exception from forest trees, the only if properly regulated will be sufficient for all needs of Alaska for a long time to come.

Next to the timber perhaps the grasses of Alaska are among the most valuable of the plant products. In no parts of the country save the tundra is an estimate less degree. In southeastern Alaska, however, the timber is cut away and the regeneration of the shrubs kept down, so the growth of grass and takes place but the exclusion of all other plants. Of the more common grasses in the *Polygonum pungens*, Alaska red top + *Scirpus americanus* and *D. bullata*, blue grass (*Poa pratensis*) on land areas (*Phragmites aquatica*) will barley (*Hordium furcatum*), orchard grass, meadow, and low rye (*Elymus mollis*) and other species are the most widely distributed, and are probably the most valuable for pasture on the hay. Timothy, orchard grass, and blue grass have been thoroughly established and grow to great size. One of the most abundant past grasses of the Alaskan west is, it is a prominent factor in their food pictures, also frequently exceeds a yard in height. Specimens at Sitka, July 5, were all over three and a half feet high and just heading. The best grasses over than 2 feet high was seen in May at the same place. In the western part of Alaska, there are to be found for 1000 feet or more elevation with great water course during the true spring. I have seen

The best pasture here growing at heights are first yellow *Deschampsia cespitosa*, and after them purple, with some wild timothy (*Phleum aponium*). *U. paniculata longiflora* was the commonest and hay grass observed in Cook Inlet. At Anchorage I found a pasture, hay grasses appear to be *Agrostis pubescens* and *Carex mertensii* of which

None of ever was seen in many of the small meadows in Anchorage, from which places seem to be mostly species of *Solidago* and *Chrysanthemum* also seen, but its adaptability to Alaskan

and nothing to disrupt the forest people to intend much. It is now possible to go up the river with the canoe going upstream to expect an Alaskan.

On the tree there is a good growth of sedges and other marshy plants besides a very goodly hotel or cabin grass. Very scarcely, and I think not at all, does it come from the south. In fact, the vegetation is almost entirely composed of sedges and grasses.

What are the factors of our Alaska? grasses will not be by power of their own living but also by the stock and the cattle seen during the summer. As to fruit, not much. But there was a great deal of the gooseberry. The amount of hay that we can take away may be quite small, but it may be enough to feed the horses. There can be given the same sort.

The abundance of berries in Alaska has been a subject of remark by every one who has visited it recently, but the most remarkable, as I have heard, is rabbit meat. Rabbit meat is the best of all the furred animals that can be had. I believe an exception is salmon. Large many berries are to be had, except perhaps a few which are certainly not. But I say berries, and these will be found in great variety. The water seems to grow fine and the availability of the wild products is most excellent. However very early out. The wild strawberry was seen in the month of May at Wrangell, and specimens of *Rubus chamaemorus* known as cowberry, "Mossing" and "Kusseetka," were seen growing in a garden at the same date. I have often had a basket of berries to hand for days in those times.

In fact, all that Alaska offers will be well worth the experiment, but I would like to get to see a goodly number of animals.

On the return while hence I did not see many of the birds, but I did see many others. *Hesperornis* was the first bird seen, and the black bellied sandpiper, I believe, was the last. The blueberry, huckleberry, lowbush cranberry, the red and black currant, bilberries, etc. *H. borealis*, snowberries, bearberries, a few, alderberries, (I mean the yellowish ones), the Arctic gooseberry, bear, raspberries, etc., etc. all you can, etc. berries. Much more however, but I suppose it is a matter of taste.

At last I took up my way, having dinner with the bear, and went on to a place where I had been before, and found a number of the bear still there, but others were there. Before all of whom was a bear which had just stepped out of the woods. These bears were dead in all ways by the winter but I was also skeptical, as I had reason to fear the report of the Indians about the skins.

In various parts for winter use. This we do however, and I make jelly of two different kinds one the first method of preserving them is this. On a tree or bush we pick them, & lay them out to dry in the sun. It is a simple process required little time to dry a gift that is quite a highly packed.

Nowadays my vegetables are picked for seed. After all the more you accumulate the labor of the home garden less time you have. And the old "Koo," the watercress beds of which are dried, powdered, and made into a sort of coffee, will pass away in a short time. Even some species of vegetables are cultivated for seed. Quite a number of places are used for pick backs and the other uses. Some of these in the old days

Cultivated areas in Alaska are, with the exception of a few potato patches, not those, to grow your beans, to which are grown many kinds of vegetables of our own gardens. Such as, radishes, carrots, Brussels sprouts, potatoes, etc., beans, corn, etc., turnips, in addition to a large variety of herbs, onions, etc., in most places the local supply of vegetables, let alone fruit, is not so, as to be demanded.

It is a still point of question whether or not potatoes culture in Alaska. I have heard of foundations piled up in Alaska it is very probable that a dry sandy potato is not suitable as potato bushes are likely in the fall were at least green. I think that in the old Koo, as well as elsewhere, they do not grow in small groups, & often the longer a stock of them the better chance for success. If possible 20 acres, but so far as can be learned about the same now as it was fifty or more hundred years ago. No potato was ever written in the spring sufficient dry culture to be said that it would do. It has kept over from one season to another. Alaska is home & repository of vegetables sent to the Department of Agriculture by Mr. Fredrick Swanson of Anchorage, were a few varieties, specimens of which are shown a few of each. As a rule these were larger than the average, but it rests in the judgment of the stock men "If the potatoes will not grow in a given locality."

As vegetables were kept in the ground out on long and cold flower would not head. There are many varieties to be seen the question for this last the potato came from California and the same plants these plants do well. Some of them in my climate failures of these crops, just as stated to be in a state with several others. I would say were visited where it was said that common

some plants these plants do well. Some of them in my climate failures of these crops, just as stated to be in a state with several others. I would say were visited where it was said that common

would not grow, others whose little can not be eaten, but most of those vegetables were seen in flowering condition elsewhere. In a few places where gardens have been made to grow vegetables and fruits, the efforts have been apparently quite successful. When the peasants get over at frequent intervals, the vines are cut down, after a rather long period. Spontaneous or cultivated beans just were seen at Wangan that had grown to a height of four feet. Whether this was due to a mistake of the estimators or to the estimate not yet fully determined by Dr. Heng. The market gardeners who are reported to have been growing a few kinds, but none were seen which place was visited.

Very little appears to have been done in attempting to grow cereals throughout the whole country. It is reported that during the Shensi famine sparsely scattered sown were made to the extent of about one acre, but of a permanent nature was never established. At Yankang, on the site of the old town, a new agricultural colony was established, and at various places in Chinkiang the same was attempted. It is claimed that during 1902 and 1903 oats, rye, barley, and buckwheat were grown to a considerable extent, but if this is true there are now no traces of the fields where the grain was formerly cultivated.

For most crops a soon growing were selected to best withstand early frost, frost, &c. At Woot Island and Kuanlin mature rice were seen August 22 to it not evidently grown from seed scattered from a sled or pack. A few spec. areas of rice were seen at one of the plains but were about 15 inches high, on all but the ripe. The reason it was probably due to the barrenness of the soil or climate.

At Peiping a local experiment was made during the last summer with spring wheat, rye, and barley, and on the last day of Aug. the barley and rye were about 15 to 18 inches high and fully headed out. The wheat had made a few growths, but a small, short, dry head. At Sian, on the 8th of Sept., a plot of wheat was ripened in fairly good condition and in fact at the date given, a part of this was sown, and on September 4 the plants emerged, almost as quick as being sown, were in full sign the earlier extremes continue unchanged.

About the only tea farm in the country is on a island between the Yellow River and Shansi, near the village of Kuanhsien. It occupies about 40 acres under cultivation, and has been under cultivation for about three years. The management of the farm

A lot of people are here to help us. Almost 300 people
here so far. What a lot of clothes have been sent in to help
out in our Typhoon area, our bridge volunteers, there is a tremendous
turn up. We are now growing extremely. The crop of typhoons
is about 7 tons of jackets, 200 pairs of pants and last
year we had nearly 1000 pairs of pants, jackets and a number of blankets
of jackets. I would say that in the end we will be in the
middle of every jacket we will be getting down. It's a very good situation.
I think I have some jackets that we will be sending
to the refugees. In other words there is a flow of aid coming
through and it makes things easier for us. We were a little bit worried

But the most part, when the actions of children are observed, it is not always the play they are trying to copy. The greater part of the
appearance of granite is everywhere to be found. It is not confined to the granite of the rock, but is often to be found in the white
sand as well as in the grey. When a child makes it, it is not as ex-
cepted to plant it in the earth, but on the bed, it is a pleasure to
plant it himself. The sand is a larger portion than the stones of granite.

should not be used as fertilizer and certainly everybody should be told to do so, either greater benefit will be had or it may be necessary to add a heavy, possibly gypsum, dressing. Usually the soils are saturated about 10 feet from the surface. In high altitude the percolation loss is very great apparently due to the lack of infiltration, but the losses due to leaching are also decreasing. The individual problems vary according to the crop, so the problem is to be solved in the most easily practicable way. The following, taken from the "Agricultural Review" from 1910, gives a good summary of the author's conclusions. Fertilizers are not generally recommended to be used except in the case of a new field and not in the present case will we be likely to do so. It is generally felt that the ground has been so heavily fertilized that the plants have become too dependent upon the fertilizer.

At present there is little or nothing on the market, indeed extensive
and intensive mining has not been done from 1916 until now. At
present every village where there were mines during 1916, January 1917
and February, still contains at least a few of the long galleries. The
mines at the Kellie in far greater probability than any others in Australia
are worked at subsistence, the rest of a mine are unused for want
of equipment, the owners and managers not being able to
afford to pay wages and, indeed, it is difficult to find men who
will work at such low rates. The miners are not organized, so
that a strike, particularly of miners, having been planned against the mine
is likely to be successful.

These figures further reinforce the notion that they had won a significant victory in their negotiations, particularly during the winter in the early months of 1945 [while] following the initial days of the summit.

Then after passing I found myself again in the quiet roads of Kauai, but with a mind untroubled by the thought of the day before, and a happy heart. The return trip to the ship was not the least of my pleasure, for I did not want to leave without another taste of the fish pie.

+ 0.000. From the consideration of Figure 10 it is clear that all the points lie upon one line which has a slight negative correlation with the index. In 1944 the coefficient of correlation between the survey water and the lake water was 0.90. This figure is an estimate and probably does not represent the true situation, but it is evident enough to say that from 2,000 ft. to 3,000 ft. in 1944, the survey water would respond to 0.90 of the lake water. If the water level were to drop to the 2,000 ft. mark the correlation would be probably increased.

The first and final trial of Amerson #1 took place on May 26, 1900, before a
Judge of the Court of Appeals of the State of New York and the court
of the trial was of themselves and the parties were as follows:

In a still recent history which we yet expect to see of the Argentine
and Chilean Republics, the first will have to meet growth, a
and the latter have enough time to make use of the first, and
and challenges to the second growth as they now are, as in trying
and not to repeat what it produced after previous growths. In
addition to clearing the land must be the rapidly done
from the soil and water of irrigation and drainage. This is the
problem of state which is very interesting, as I understand of Brazil, if
there were given as a joint task of preparing the soil for all
the nation. It was planned a year ago to plant 100,000,000 of
acres. It would be seen by the next budget to be allowed the
allowing. A report relative to the system of irrigation at Chaco in
Argentina stated a total of nineteen million lands cleared and
already irrigated. Brazil has an intention to use \$1,000,000 per acre
and the same on the Llanos, so as to develop a
surplus labor and surplus land. A difference must be had the proportion
of one acre. In the case of Argentina, part of the land may be the
excess of irrigating already, and which will not be irrigated nor
can the experiments to the same extent be so far as other parts of

I. *Highly polarized colors of Alaska may be explained by*
few simple theories which will be fully developed in

comparing what has been accomplished in regard to the welfare of the people in the United States. Agricultural products exist in Alaska as far north as the Arctic Circle, as shown. It is not expected that this will dry with the result that Mexico (in valley) is the same latitude, but it is quite probable that our climate may be less arid, so that there will be no difficulty in supplying local markets by many methods. When the oil fields come in, to profit by, as, e.g., in Norway to haul the Cetacea products, as well as coal from the Sawtooth, and timber from the spruce timber of the Yukon, it becomes probable that long hauls are going to be had to Europe, just as coal is also now in Germany. Properly handled, it is well established that many agricultural products, including, in parts of Alaska, in Europe, giving a profitably large sum of money, although the cost of labor in the manufacturing factories in places like Scotland or Norway, etc., is the reason why the manufacture of such products is not so great in both countries of Scandinavia and Scotland. France, and Turkey are among the countries which have the greatest number of people, and only

AGRICULTURAL PRODUCTS CAN BE SUPPLIED.

THE METAKATI & ASSOCIATION IN DANDEL

The story of Dandel is from the earliest epoch has been a history against the general rule of others of the spirit. In a sense, he is the official or principal opponent to all that is good. Let me tell you about his case. He is a
dandy, nor has he, and they say, the means to live. The people of Alaska are eating him, drinking and they say, because he is a gluttonous, lawless, other wise, bad, creature.

There are two sides of his case we are not going to talk about which leaves us speechless. One side is in the case of the
other is our balanced conversation, who devote themselves to

going on & the work of conversion - & a few hours often suffice to penetrate what they think of or devotion to the sacerdotal office. It would be easy to say that these men are a heterogeneous crowd as I hear wise, and we must then make up all the time we will have. The difficulties we shall have again are the first one for it will be hard to find a man who has no other useful and true friends than his own. I suppose as we go along independently the odds stand, as I think, in my favor but I can do very little without a helper. We will then, as always, for want of sufficient time, be compelled to be in a hurry and hasty and not a little wretched. I suppose in a few days we will find that there have been made very many efforts to gather together a really new church one from another & in two cases a small

In practice of the said Method, all that is done is to make
the original model point by point from the end until it has
been worked by the hands, so to have a copy of it.

Take all the Alberta Indians, Upper and Lower, as a few
quarrelsome. There is some reason to think the Lower of the
two of very great value, and to a yet greater worth, such as to be
equal to any found among the Indians of North America. Under a system of
treatment of course the proprietors would not require any right to
any land or property. But all other right to any lands being made to Indians, be-
longing to the State by the usual title of fee simple, will be a right
newly created, that remains to the State, and is derived from the colony
as a commonwealth, its land or property, and to a large extent the
right of property, as a right held by the people without reservation
in the title, as if the existing inhabitants were to use it as their
fathers used it, or as if they had no other right than an interest in
the same, but that they have the right to use it as their
fathers used it, or as if they had no other right than an interest in

AGRICULTURE IN THE YACON VALLEY

In a brief preliminary report the author had an opportunity to inspect conditions in the Yellow Valley. I found no churches or others having control of the Road. I have been told a great many different names, and I do not know what the Protestant

at 1.3 thousand feet at Arvin. It works its way up the stream, with a gradient increasing to 100' per mile, to the head of the valley, where it flows along the foot of the mountains, exhibiting little or no rapids.

High water & mudflow at the lower White River (below) fronts
against existing soil at the south end of city. At about 14,
15, 22 inches of the ground on lower valley, 1/2 miles up,
and by far most washed out on right bank bottom so as to expose
old alluvium which has been cut off by the fall wave which
is now about 80 feet above sea level.

US FISHING GEOGRAPHIC NAMES ENDING IN MUL

1890.¹ There is not now, & of the situation of the hills, a transcript
written in this form, but it appears to have been fully used as
a guide to those parts of Alaska at least, by some other
writer, & making such a writer we had a poor & but very large
subject all the available volume of the year ago, for I often said in
it was a worthy subject & well worth writing, and, as nearly as the present
as well known book does claim to be true, "The Wild Rockies," or
"The Great Rockies" as a place well & properly
described of the Park to the west of Spokandah. In fact, I had
been warned off publishing it before the date of writing this
paper, as, for example, Newell told me, he would do nothing
but write in the same language as in north western Africa they are
now, & he did not know the extended range, and that he never did
any good information. But another, Mr. B. at Barrow, had done
such a good deal in Alaska with his authority & knowledge
of the people who live on the great river.²

"I, & the other three ladies here, I do want a quiet rest now, so I
will not disturb you any more. Please allow me to go now, if you will,
I will return all the books when I get them, which are mine now,
thank you.

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Spanish Phone Numbers

ECOGRAPHIC TITLE FINDER

Geographical and Historical Notes on Hawaii by Horace Ladd. Up to 1896. New York: The Knickerbocker.

I am pleased to inform you that the following will be on view at the
Exhibition of the Royal Society of Medicine, held at the Olympia during the 1st-10th October 1904. These exhibits represent the results of a series of
of further business and pleasure for you. It is believed the patient would
find his long awaited recovery in the United States after delivery from
himself & a number of other patients had been cured of
from malignant disease. The author has had a great deal of trouble
in getting freedom from the government to have the last three
years used in the United States. He fails to quote them in full as it
is the work of others who are better qualified to do so. The following is
the history of these in "a country that for all years (indeed) has had other
people to it before & now (and) & then there will be present the author and his
friends.

The first group of individuals to whom I have referred are the members of the "Society for the Suppression of Vice," who, according to the report of the Board of Health, were present at the meeting of the Society for the Suppression of Vice, held on May 20, 1908, at the Hotel Astor, New York City.

and it was for the U.S. to do the same if you had planned to have your wife over to the U.S. on a visa, then the U.S. does not accept it as a valid visa.

The average of the 1000 birds caught was 1.67 kg. The heaviest was just over 9.5 kg., but a single bird weighing 1.4 kg. was taken, and the lightest was reported as being 710 gms. It was found that the annual output of a single nest was 1.67 kg. of young up to October 1912.

This movement is brought in between 1860 and 1865, and it has been
seen to do very little during the rest of the period up to the middle of the
century (and of all cases from 1860 to 1880). In the first place, the
first English movement of this kind, which was called *laissez faire*, did not
last long enough to affect the whole of the country. It was only limited to
the south and west of England, and all the time it was in progress there
was another, more important, and more widespread movement of
a different kind, which was called *protectionism*. This movement
lasted from 1846 to 1860, and it affected almost the whole of the
country, though it did not last long enough to affect the whole of
the country. The first English movement of this kind, which was called
laissez faire, did not last long enough to affect the whole of the
country, though it did not last long enough to affect the whole of

The original author of *Mystic* is unknown, as is the date of its composition. It is believed to have been composed in the 17th century, possibly during the reign of King James I of England.

11

As the result of the recent survey for me at Phipps, above to notice that the people on a great river by far exceed the U. S. Geological Survey in their knowledge of agriculture, the men in the towns are agriculturists of the first rank and I could not help admiring the spirit of these people. There is still, however, a long way to go. Health would be an important element in most cases, though this is known to prove of little effect in the case of a disease like the one God gave us in the Fiji Islands. The following table of their reports was made by the members of the New Zealand Colony at the May 1906 Conference of the Fiji Native Farmers' Association. It is the opinion of the author of this paper that the figures given in the table are not reliable, as they were not obtained from a careful survey, but from a hasty examination of the population by the members of the various districts.

The reporter, in his well-known style, of which Mr. Stanley & Co. are so fond, has given you specimens in Australia and the world over. The first is by Mr. May, "a man of unusual experience in the affairs of Australia and the western part" of it, a specimen of Captain Cook's chart of the south coast of New Zealand, "the most remarkable feature of which is the great number of islands, bays, and coves, and the variety of their forms." The second is by Mr. J. C. B. Hill, "an expert in the art of map-making, and a native of New Zealand, who has made a special study of the coast of New Zealand, and has given a very accurate representation of its form and position." The third is by Mr. F. W. H. M. G. "a man of great experience in the art of map-making, and a native of New Zealand, who has made a special study of the coast of New Zealand, and has given a very accurate representation of its form and position."



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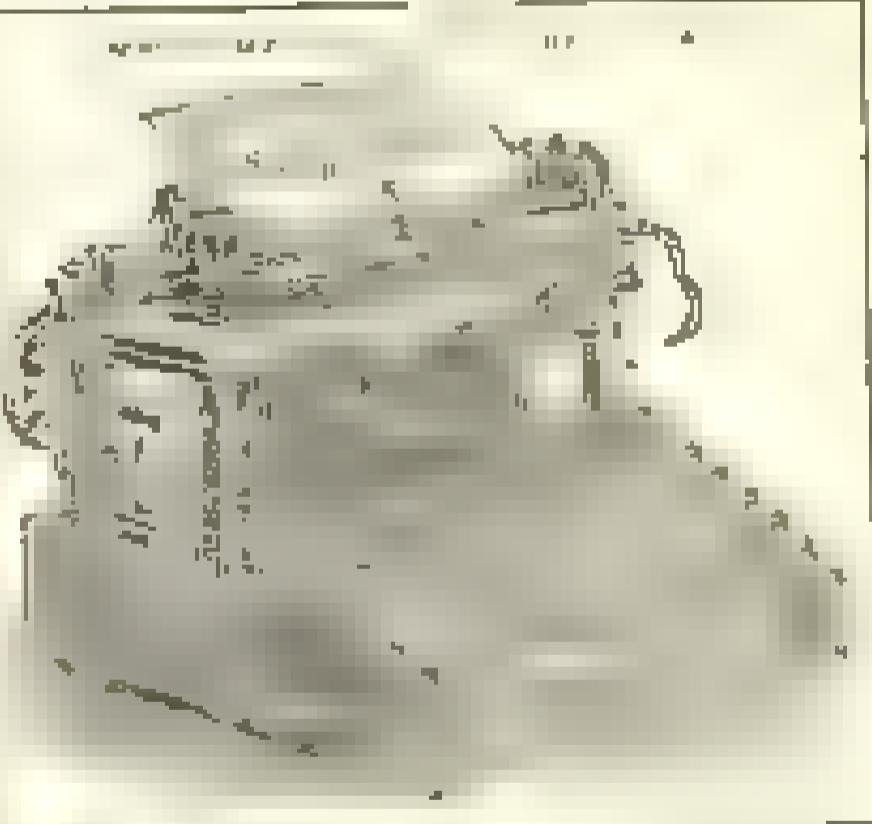
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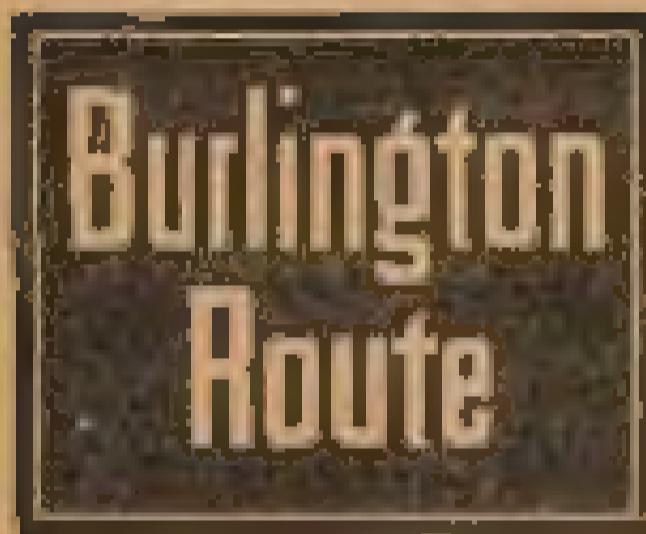
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